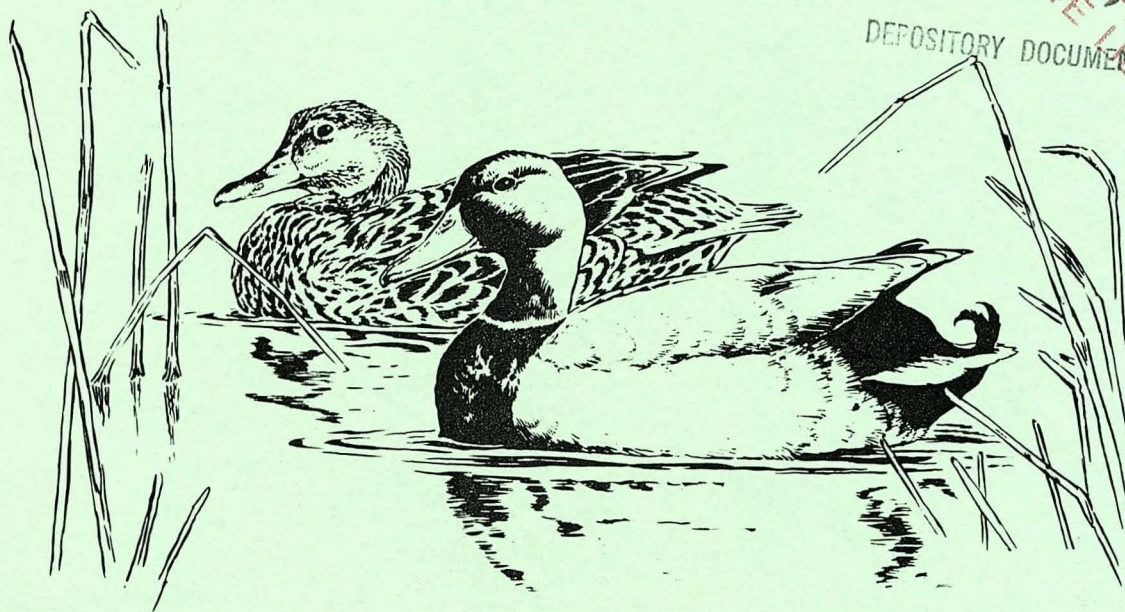


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Yearbook of Population Trends for Missouri Wildlife 1987



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**Missouri Department of Conservation
Wildlife Research Section
October 1, 1987**

PREFACE

Each year employees of the Department of Conservation receive many inquiries from the public and press regarding the status of Missouri's wildlife. What was the effect of last winter's snow?.....Is the outlook for hunting season a favorable one?.....Are rare and endangered species continuing to decline?.....and many others.

This booklet is a compilation of much of the latest information on populations of certain Missouri wildlife. It is designed for use by Department personnel to aid in responding to inquiries. Its availability is timed to precede our major autumn hunting seasons.

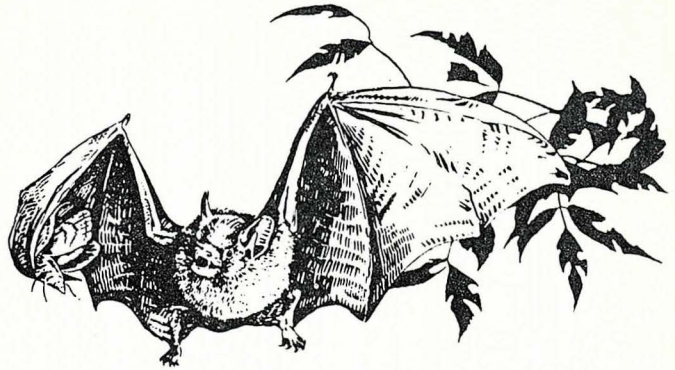
If you have questions or need other information, feel free to contact contributing authors at the Fish and Wildlife Research Center in Columbia (1110 College Avenue, Columbia, MO 65201; 314/449-3761). We hope you find the publication useful and would appreciate any comments or suggestions you may have regarding it. We also thank many Department personnel, especially conservation agents, for providing much of the data for these important population surveys.

The information reported in this publication was obtained from projects that were funded in part with Federal Aid in Wildlife Restoration Act funds under Missouri's Pittman-Robertson Project W-13-R.

Dave Erickson
Wildlife Research Supervisor

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ENDANGERED BATS

A total of 24 Missouri caves have harbored hibernating populations of at least 100 Indiana bats during recent years. Nineteen of these caves hosted Indiana bats during winter, 1986-1987 (Table 1). The population at 1 cave was at an historic high level. However, all others were below historic highs, and most were well below those levels. Further, 8 of the 10 caves for which the Department has continuous data for the period 1983-1987 showed continued declines. Indiana bats in Missouri continue to be in jeopardy, despite conservation efforts to date.

In contrast, recent gray bat censuses reveal a more optimistic picture. Maternity cave surveys during the period 1981-1985 found populations stable or increasing in total number (Table 2). Another round of censuses is planned for August-September, 1987.

TABLE 1. Indiana bat populations at 19 Missouri hibernacula during the period 1983-1987 compared to historic maximum populations.

Cave	County	POPULATION			
		Maximum	1983	1985	1987
Bat	Shannon	123,800	30,750	30,450	4,150
Bear	Franklin	3,250	1,100	650	525
Brooks	Pulaski	19,450	11,150	5,500	4,900
Bruce	Pulaski	500	--	--	10
China Pighole	Wright	75	--	--	0
Cop. Hol. Sink	Franklin	15,550	3,150	1,050	600
Disloc'd Thumb	Texas	2,250	--	--	500
Great Scott	Washington	85,700	85,700	77,950	60,650
Great Spirit	Pulaski	3,900	1,600	500	40
Martin #1	Shannon	8,00	5,350	3,550	4,900
Onyx	Crawford	12,700	3,250	2,250	2,050
Onyx	Pulaski	600	--	--	1
Piquet	Pulaski	600	--	--	575
Pilot Knob	Iron	139,000	--	--	--
Powder Mill	Shannon	150	--	--	50
Ryden	Pulaski	10,550	4,950	2,000	700
Saloon	Crawford	150	--	--	20
Scotia Hollow	Washington	5,300	4,550	3,400	5,300
Smittle	Wright	550	--	--	1
Tunnel	Pulaski	4,000	--	--	75
TOTAL ¹		436,175	299,425	275,165	224,047

¹ Totals for years in which census data were unavailable for particular caves assume population levels equal to the most recent prior census.

TABLE 2. Results of Gray Bat Maternity Cave Censuses, 1981-1985.

County	Cave	ESTIMATED POPULATION			Status
		1981	1983	1985	
Barry	Arthur	0	- ¹	-	Abandoned
Barry	Blacksmith	8,000	3,450	26,500	Unstable
Benton	Estes	1,300	1,540	2,500	Increasing
Boone	Holton	-	-	1,000	Believed Stable
Camden	Adkins	26,800	22,850	30,000	Stable-Incr.
Camden	Bagnell Dam Tunnel	-	(16,600) ²	-	Abandoned
Camden	Lower Burnt Mill	40,000	0	15,500	Unstable
Camden	Mauss/Moles	42,800	50,000	54,500	Stable-Incr.
Camden	River	(4,000)	(240)	(7,000)	Transient
Carter	Coalbank	1,500	-	4,000	Increasing
Christian	Rantz	? ³	24,950	33,000	Increasing
Cole	Unnamed No. 2	(1,000)	0	-	Abandoned
Crawford	Saloon	-	(6,750)	(15,000)	Transient
Dade	Maze	?	7,150	-	Unknown
Dallas	Hilderbrand	(200)	(170)	0	Abandoned
Dent	Bat	20,000	27,700	29,250	Increasing
Franklin	Bat Nos. 2 & 3	3,000	2,120	3,650	Stable
Franklin	Roaring Spring	17,000	17,000	19,500	Stable
Hickory	Beck	?	?	?	Believed Stable
Hickory	Blackwell	0	5,350	9,500	Increasing
Jasper	Coolbrook	0	4,650	1,500	Unstable
Laclede	Competition Bat	0	-	(6,000)	Unstable
Laclede	Davis No. 3	0	-	-	Abandoned
Laclede	Mary Lawson	21,500	0	19,000	Unstable
McDonald	Henson	(100)	-	-	Abandoned
McDonald	No Name	4,000	8,800	14,000	Increasing
Maries	Indian Ford	0	-	-	Abandoned
Oregon	Bat	1,700	-	4,000	Increasing
Oregon	Dead Man	5,300	4,850	-	Stable
Oregon	Thrasher Ford	7,500	0	8,100	Stable
Oregon	Turner Mill Spring	0	-	-	Abandoned
Osage	River	(500)	-	-	Abandoned
Ozark	Bat	22,500	33,250	21,000	Stable (?)
Ozark	Bob & Mark No. 1	4,000	3,350	?	Stable
Pulaski	Brown No. 1	50,000	33,250	44,000	Unstable (?)
Pulaski	Bruce	?	-	-	Unknown
Pulaski	Great Spirit	(25)	(24,750)	(11,600)	Transient
Pulaski	Piquet	0	-	-	Unknown
Reynolds	Cooks	?	13,000	19,500	Increasing
Stone	Mud	0	-	-	Abandoned
Stone	Stillhouse	3,000	0	?	Unstable
Texas	Bat	9,000	3,450	2,000	Declining
Texas	Dislocated Thumb	16,000	4,850	17,500	Unstable
Wright	Smittle	(60,000)	(22,150)	(105,500)	Transient
TOTALS		351,000	293,170	397,800	
No. Active Maternity Colonies		26	24	27	

1 - = Not surveyed.

2 () = Not included in total because status and colony type uncertain.

3 ? = Bats used the cave, but their number could not be estimated.

PRAIRIE CHICKEN

Prairie chicken males gather each spring at traditional areas called leks or booming grounds. Depending upon the weather, birds may gather as early as January and will continue to visit the grounds until June. Each year the number of birds on certain booming grounds is determined by Department observers and these data provide an important indication of prairie chicken status (Figure 1). Figure 1 implies that the number of prairie chickens has not changed during the past 42 years; however, this conclusion would be incorrect because these data are only for populations south of the Missouri River. The species has experienced a significant reduction in range with prairie chicken numbers north of the Missouri River declining from over 2,000 in 1945 to only 200 in 1987. In southwestern Missouri, populations on censused areas have remained fairly stable, however, much of the land that previously supported populations no longer hosts prairie chickens.

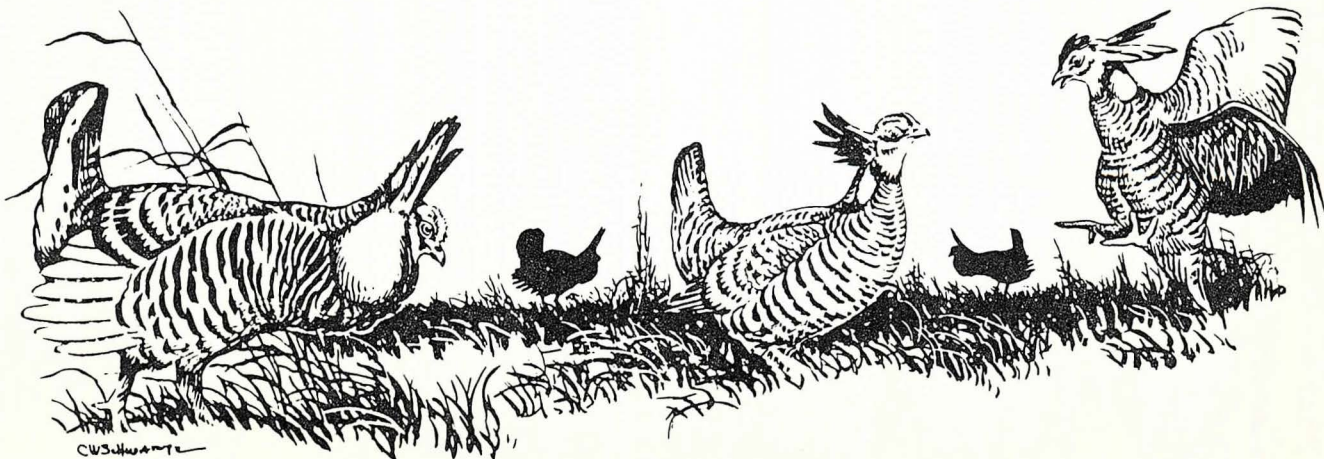
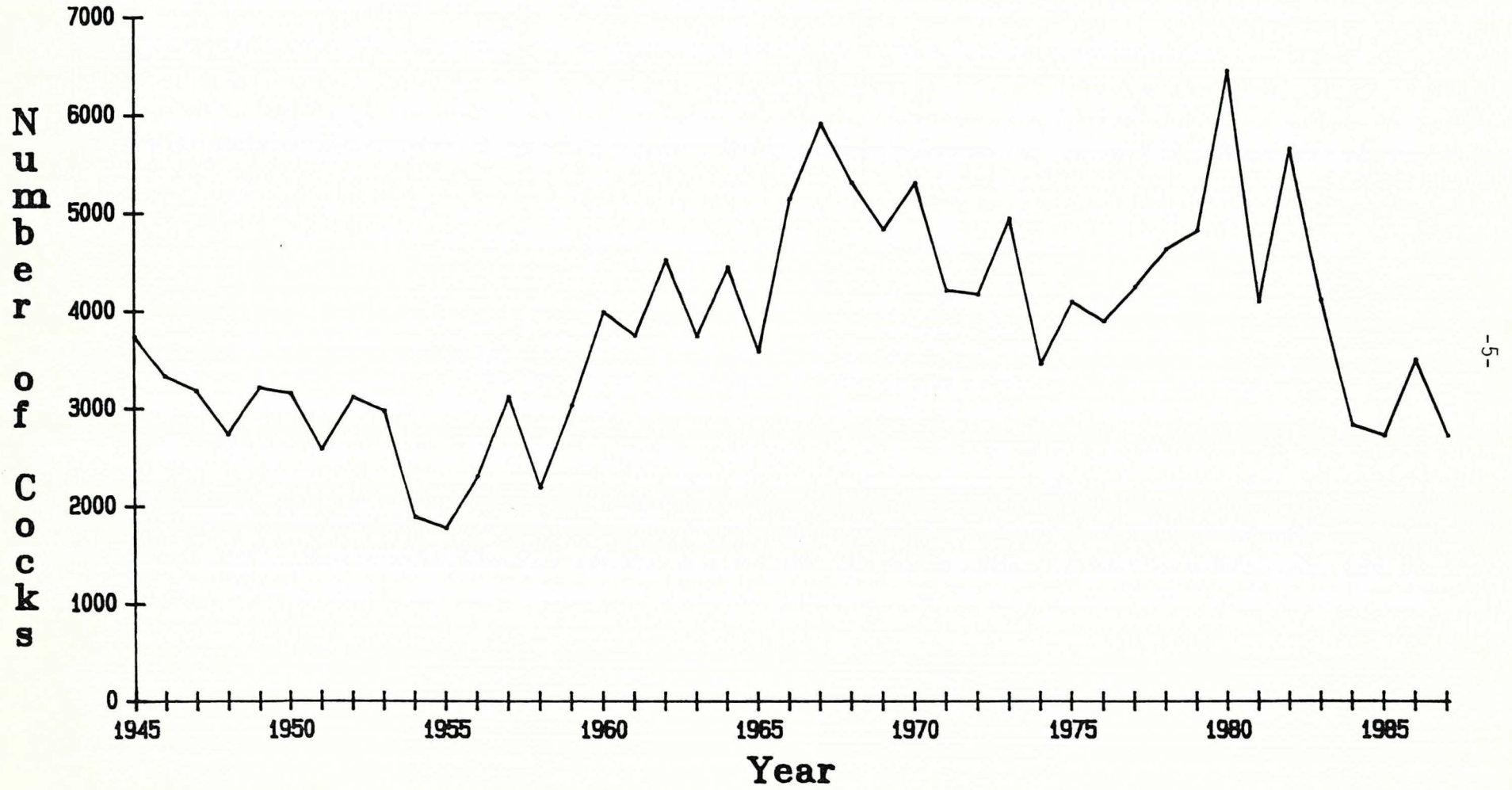


FIGURE 1

Number of Prairie Chicken Cocks in Southwestern Missouri



COTTONTAIL RABBIT

The summer rabbit roadside survey has been conducted since 1947. This annual survey (Table 3) allows us to predict rabbit hunting success for the upcoming season. This must be done cautiously, however, because severe fall and winter weather can reduce rabbit populations and hunting success. For 1987, the number of rabbits per mile of census route increased 25%, and we are optimistic about prospects for the 1987-88 hunting season.

Mail surveys of small game hunters provide estimates of rabbit harvest and hunting pressure. The surveys have been conducted since 1967-68 by gathering information from a random sample of small game license holders. This allows us to monitor long-term trends in rabbit harvest and hunting characteristics (Figure 2).

Another harvest estimator is provided by rabbit hunter cooperators (Table 4). Several hundred hunters report on their hunts, providing dates and counties hunted, party sizes, numbers of hunting dogs used, and numbers of rabbits wounded and killed.



TABLE 3. Regional Summer Roadside Rabbit Census, 1987.

Zoogeog. Region	Number Routes	Number Miles	Young:Adults		% Change	Rabbits/Mile		% Change
			1987	1986		1987	1986	
NWP	12	242.9	1.66	2.36	-30	1.10	0.74	+49
NR	11	213.2	2.46	2.10	+17	2.32	1.50	+55
NER	20	405.6	3.00	2.45	+22	1.43	1.40	+2
WP	13	262.7	2.77	2.02	+37	1.31	1.30	+1
WOB	13	262.1	1.98	2.49	-20	1.40	1.04	+35
OP	24	473.7	1.38	1.81	-24	0.82	0.81	+1
NEOB	12	231.8	2.46	2.32	+6	0.71	0.53	+40
ML	7	151.5	2.46	2.82	-13	1.12	0.84	+33
STATEWIDE	112	2243.5	2.22	2.25	-1	1.24	0.99	+25

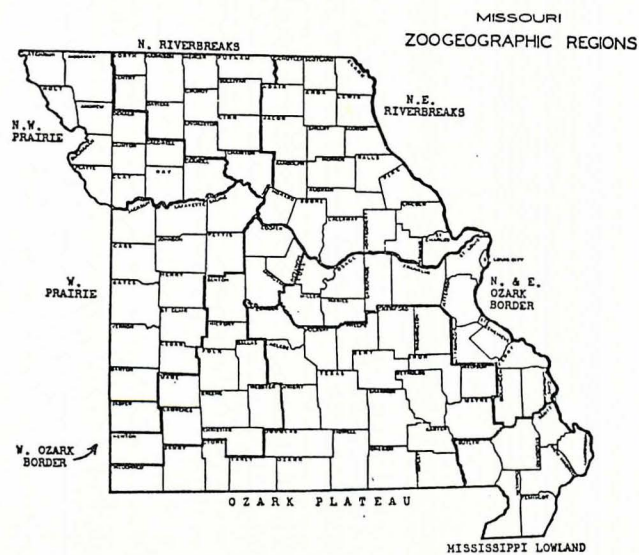
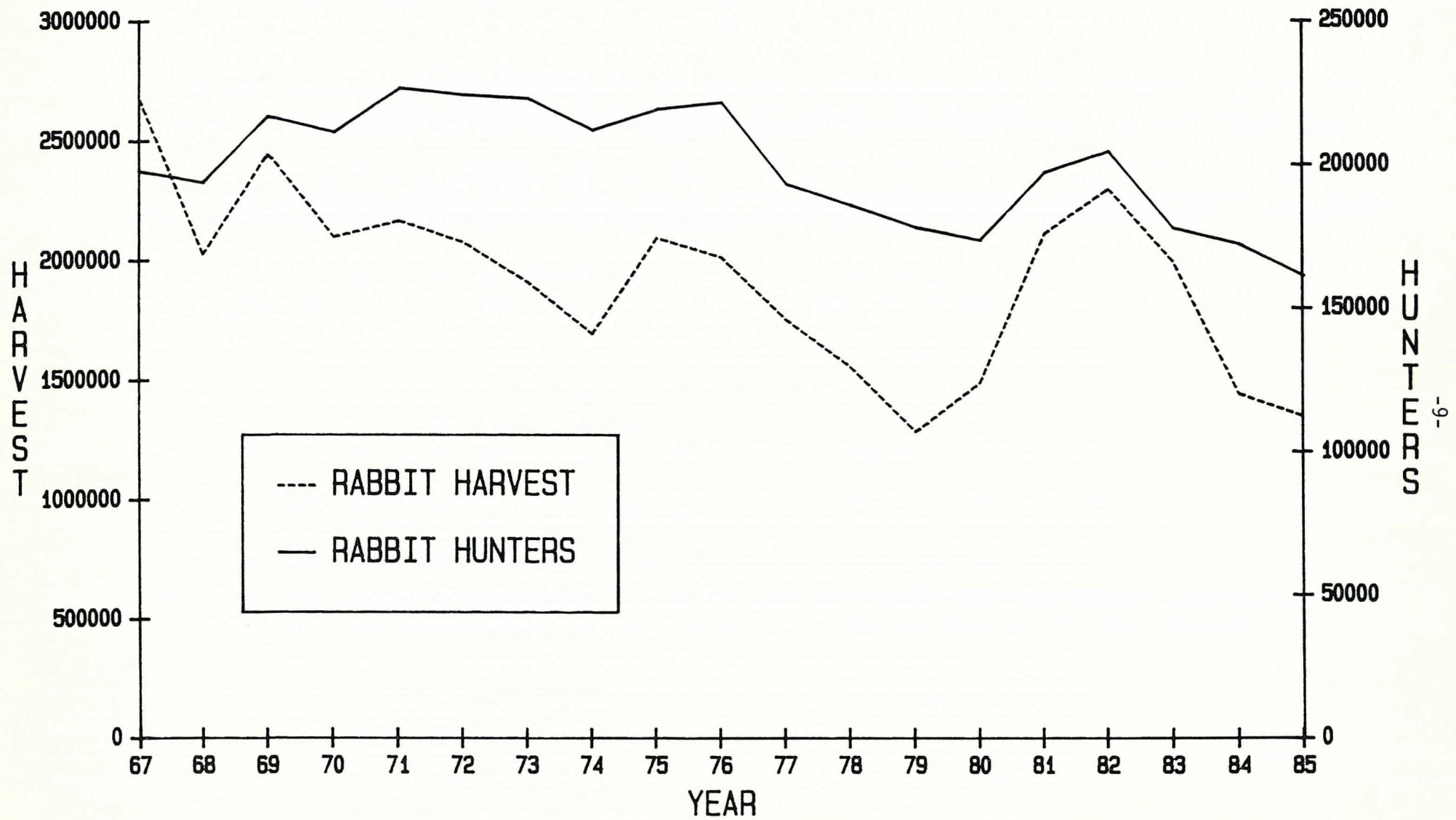


TABLE 4. 1986-87 Regional Rabbit Harvest By Cooperators.

Zoogeographic Region	Trips	Kill	KILL PER TRIP		% Change
			1986-87	1985-86	
NWP	67	135	2.01	1.36	+48
NR	52	217	4.17	3.33	+25
NER	358	1265	3.53	2.70	+31
WP	111	400	3.60	2.72	+32
WOB	109	356	3.27	1.84	+78
OP	140	356	2.54	1.08	+135
NEOB	85	195	2.29	0.96	+138
ML	105	226	2.15	1.41	+52
STATEWIDE	1027	3150	3.07	2.16	+42



Figure 2 . Rabbit harvests and hunter numbers, 1967-1985, estimated by small game mail survey.





TREE SQUIRRELS

Data on annual squirrel harvests are collected by two methods; the small game harvest mail survey, and the squirrel hunter cooperator survey. The small game harvest survey provides statewide and regional estimates of total harvest and hunting pressure (Figure 3). The cooperator survey provides state, regional and period trend data on the age/sex and species composition of the harvest and harvest pressure (Tables 5 and 6).

Data on annual mast production provide the best indicator of potential changes in squirrel population (Figure 4). Lows in mast production, such as 1983 and 1984, result in decreased squirrel harvests in the following year. With the increase in mast production experienced in 1986, this year's squirrel harvest should increase significantly.

FIGURE 3

ANNUAL SQUIRREL HARVEST AND HUNTER NUMBERS

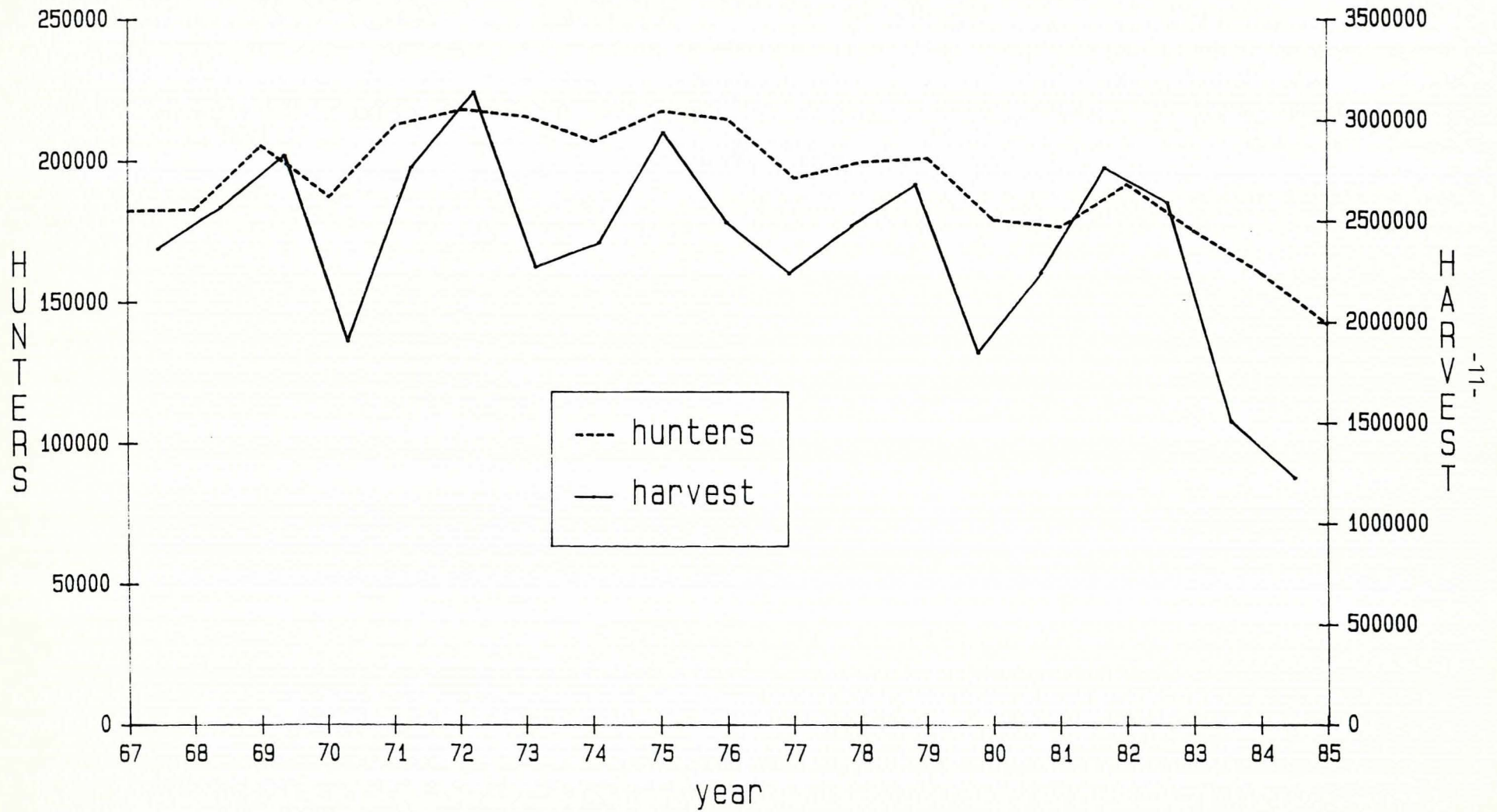


FIGURE 4

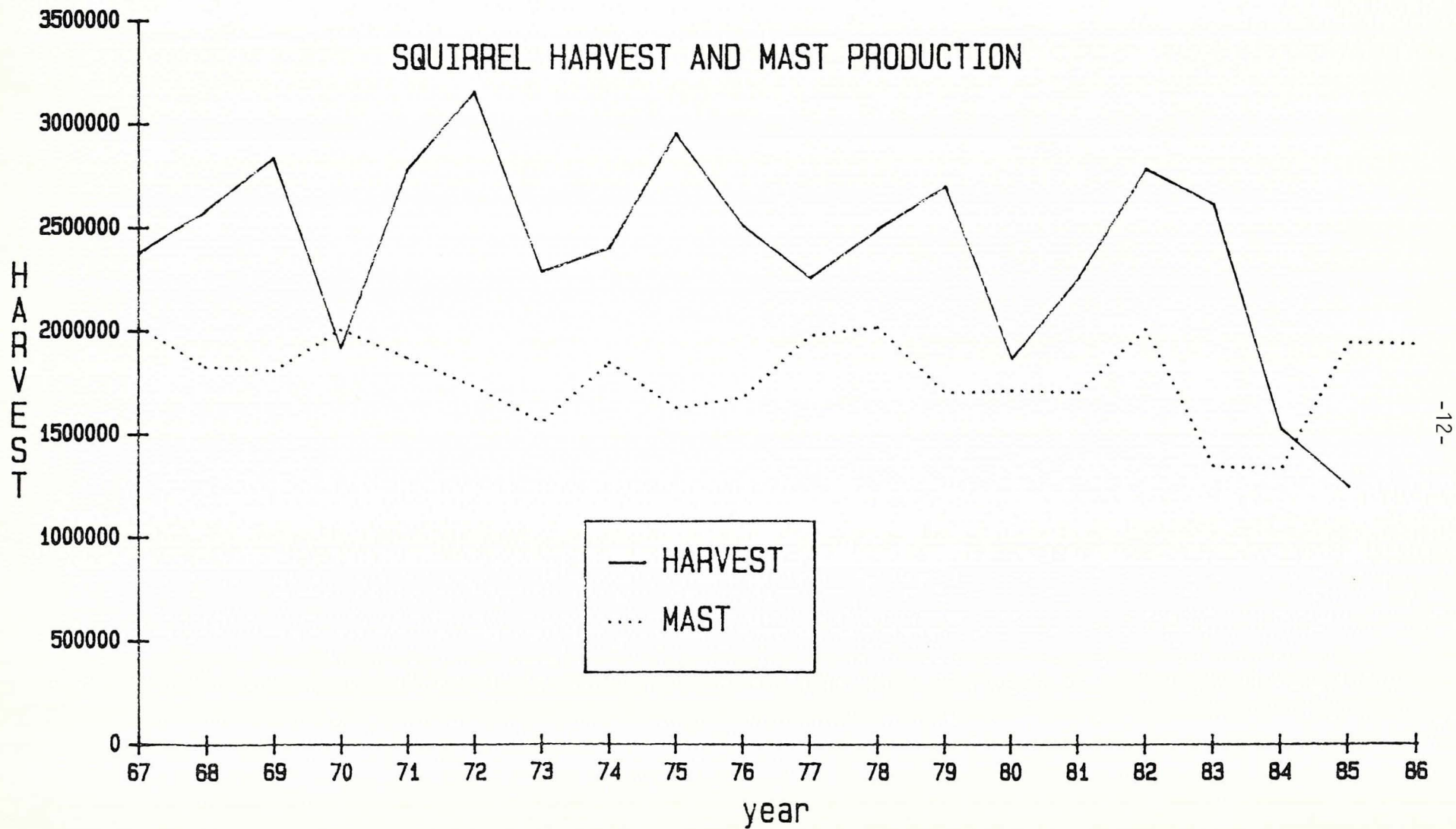


TABLE 5. Regional Summary - 1986 Squirrel Season

Region	Ave. Time Per Hunt	% Fox	% Gray	% Young	SQUIRRELS BAGGED PER HOUR AVERAGE			
					1986	1985	1984	1983
PRAIRIE	2.0	59.7	40.3	58.2	1.6	1.6	1.4	1.7
N. Prairie	2.1	65.3	34.7	56.4	1.4	1.4	1.2	1.5
W. Prairie	1.9	48.0	52.0	65.1	2.0	1.9	2.0	1.9
FOREST	2.6	48.5	51.5	54.3	1.3	0.8	0.8	1.6
Breaks	2.5	48.0	52.0	49.8	1.3	1.0	1.0	1.6
Lindley	2.5	68.5	31.5	42.6	1.2	--	--	--
Union	2.5	35.5	64.5	53.8	1.3	--	--	--
Ozarks	2.7	50.0	50.0	54.2	1.3	0.6	0.6	1.6
Oz. Border	3.0	67.8	32.2	63.2	1.2	--	--	--
Oz. West	2.1	44.0	56.0	60.6	1.6	--	--	--
Oz. East	2.9	37.0	63.0	63.8	1.1	--	--	--
DELTA	1.9	65.3	34.7	56.4	1.5	1.2	1.0	1.3
STATE	2.5	50.7	49.3	55.2	1.3	1.1	1.0	1.6

SQUIRREL REGIONS

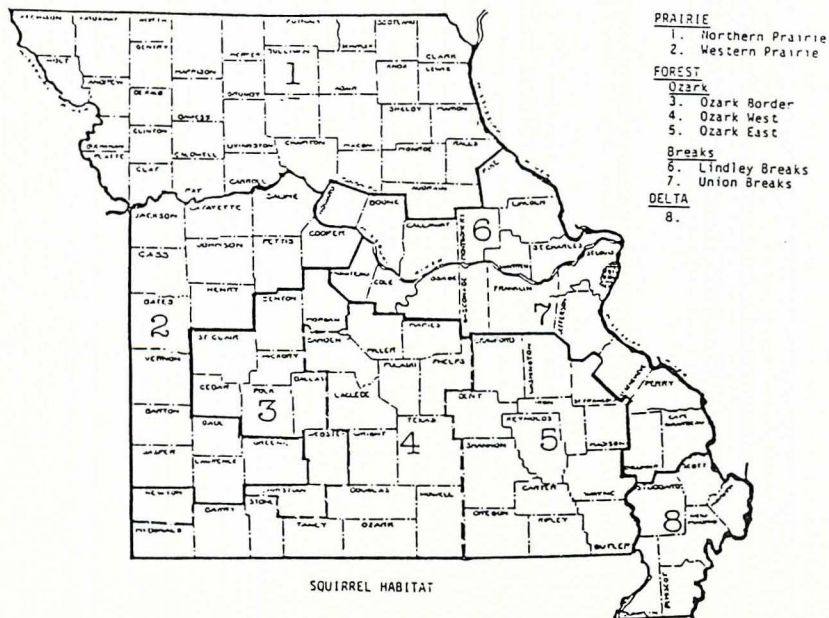


TABLE 6. Bi-weekly Summary - 1986 Hunting Success

Period		% TOTAL		Squirrel Bagged Per Hour	% Harvest Adult Females Pregnant		% Harvest Adult Females Nursing		% Harvest Juvenile	
		Hours	Kill		Gray	Fox	Gray	Fox	Gray	Fox
May	25-31	7.7	6.7	1.12	6.25	8.33	9.38	30.60	22.25	29.67
June	1-15	6.1	4.9	1.05	5.00	10.34	50.00	6.89	26.02	24.54
	16-30	2.4	2.2	1.18	--	20.00	57.14	6.67	16.10	28.81
July	1-15	3.4	2.7	1.02	5.55	23.81	16.67	9.52	16.44	26.71
	16-31	3.0	2.2	0.97	--	18.75	--	18.75	23.33	36.67
Aug.	1-15	8.4	9.0	1.39	--	7.69	6.06	15.38	32.93	31.98
	16-31	16.3	18.8	1.48	1.47	5.88	16.18	12.94	34.18	24.85
Sept.	1-15	14.4	15.4	1.38	7.14	5.00	15.71	11.25	35.53	21.37
	16-30	9.9	11.1	1.44	--	--	9.84	16.00	34.11	24.29
Oct.	1-15	8.6	9.5	1.43	--	2.00	11.11	8.00	27.96	27.18
	16-31	6.8	7.1	1.34	--	--	2.38	6.67	33.51	21.56
Nov.	1-15	4.4	4.5	1.32	--	--	--	3.85	19.03	35.22
	16-30	2.1	2.1	1.27	--	7.14	--	--	18.58	22.12
Dec.	1-15	2.1	1.9	1.21	--	--	--	--	15.09	13.21
	16-31	2.6	1.9	0.94	--	--	--	--	16.50	18.45
STATE		100.0	100.0	1.29	2.24	6.12	12.56	11.87	29.59	25.58

UPLAND FURBEARERS

Data on the yearly trends of upland furbearer populations are collected by two annual surveys; the Sign Station Survey and the Archer Furbearer Survey. Both provide regional and statewide indices of population abundance and yield information that may be valuable long-term trend indicators.

Sign station indices (Figures 5 and 6) are determined from furbearer visits to scent stations. The survey includes 24 different routes distributed in all eight zoogeographic regions. Indices are calculated as the total number of visits by a particular species divided by the total number of operable stations and then multiplied by 1000.

Archer Furbearer Indices (Figures 7-12) are determined from sightings of furbearers and other wildlife by cooperating archery deer and turkey hunters. This index is expressed as the number of sightings per 1000 hours of hunting. Approximately 3,500 cooperators participate annually, and because of their hunting style and reputations as keen observers, their sightings may provide an excellent index to regional population trends.

Upland furbearer populations undergo periodic population fluctuations; however, during recent years only gray foxes in the Ozarks have declined appreciably, and their numbers are increasing because of recent improved mast conditions and a rebounding squirrel prey base. All other species appear stable or increasing in number.



FIGURE 5

CANINE SIGN STATION INDICES

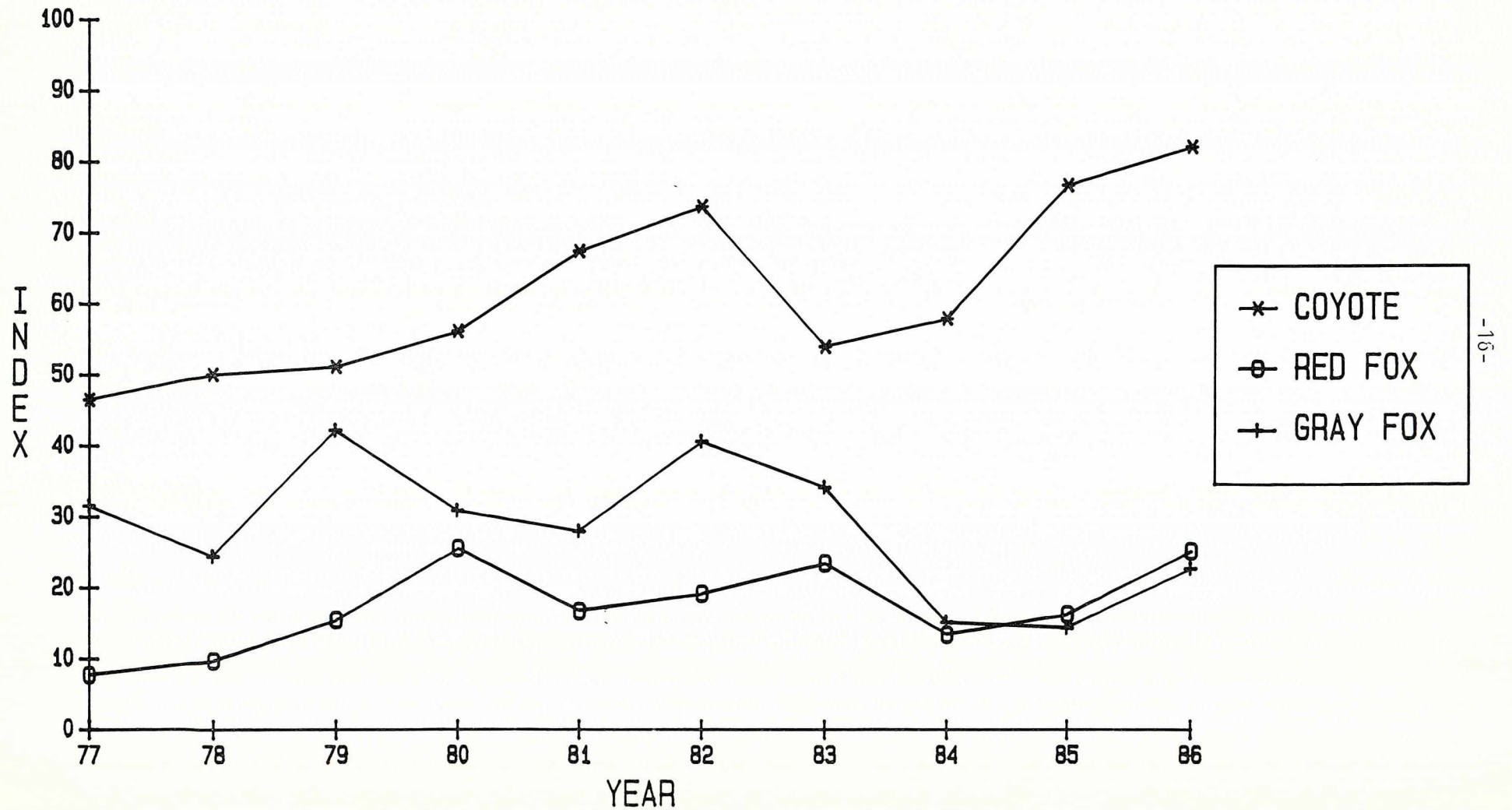


FIGURE 6

FURBEARER SIGN STATION INDICES

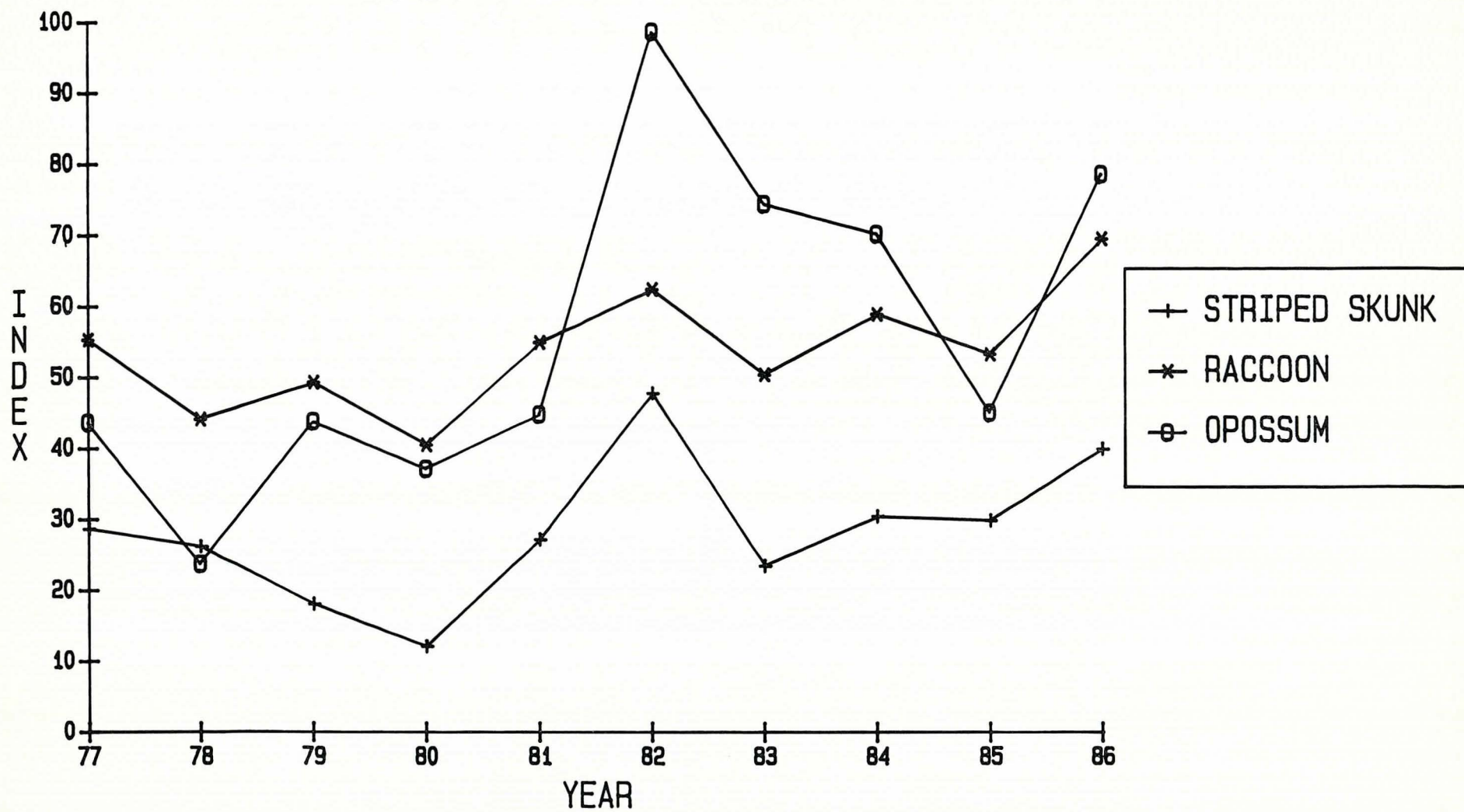
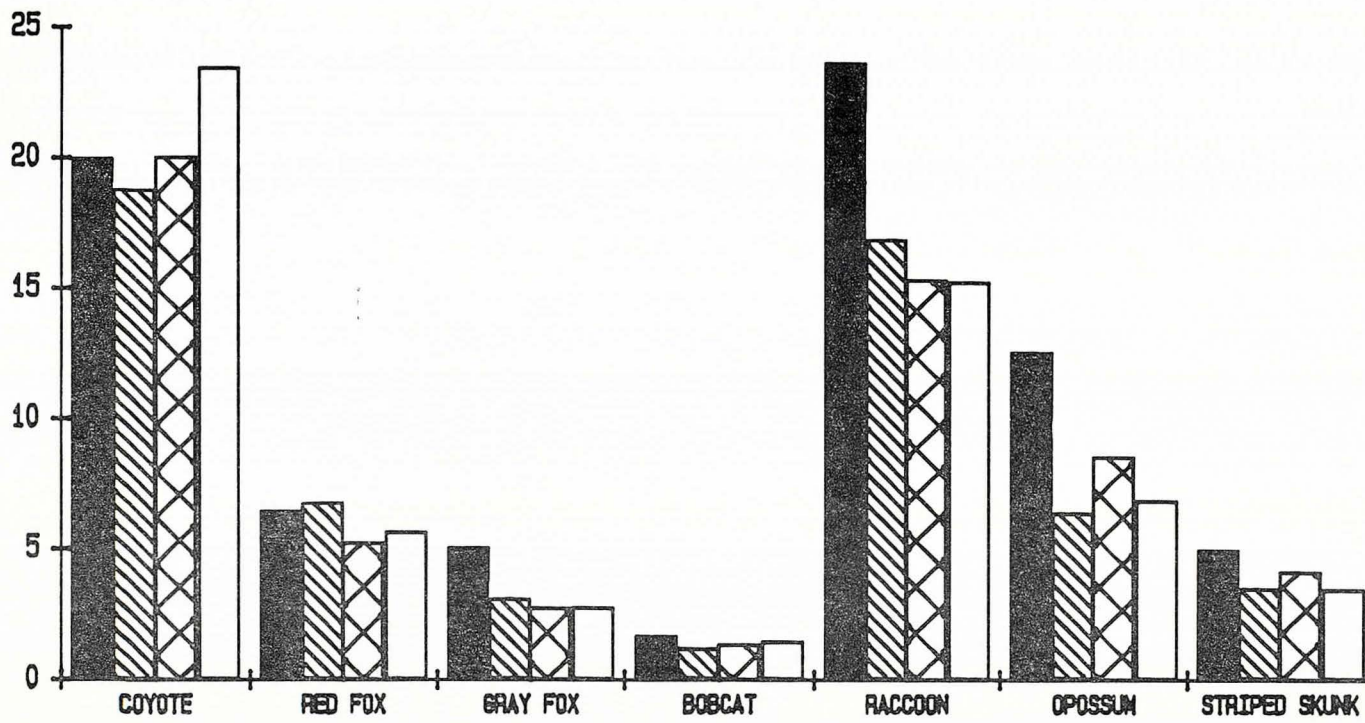


FIGURE 7

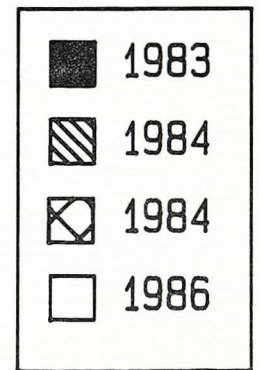
STATEWIDE ARCHER FURBEARER INDEX SUMMARY
1983-1986

ARCHER'S
INDEX



(SIGHTINGS/1000 HOURS)

SPECIES



-19-

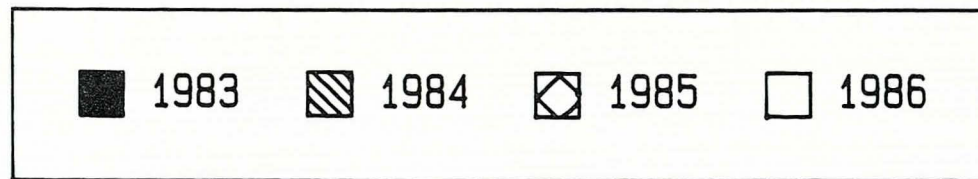
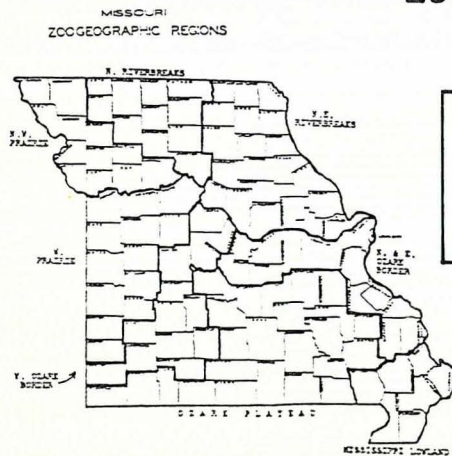


FIGURE 9. Regional observations of red fox and coyote by cooperating archers, 1983-86.

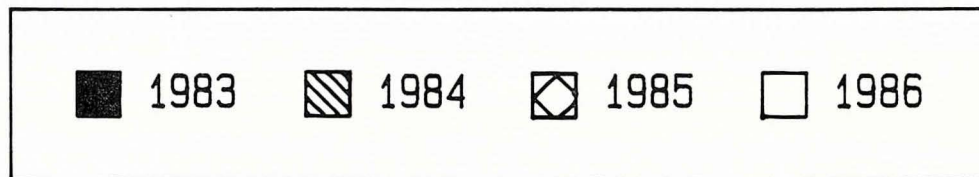
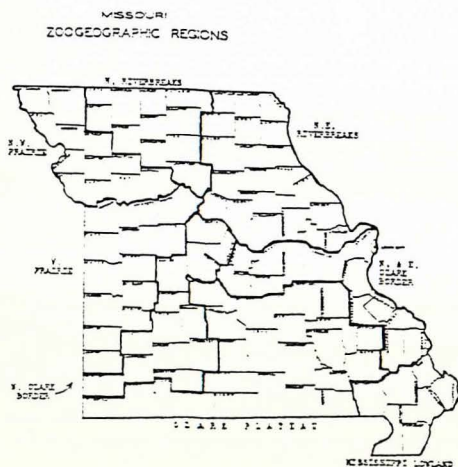
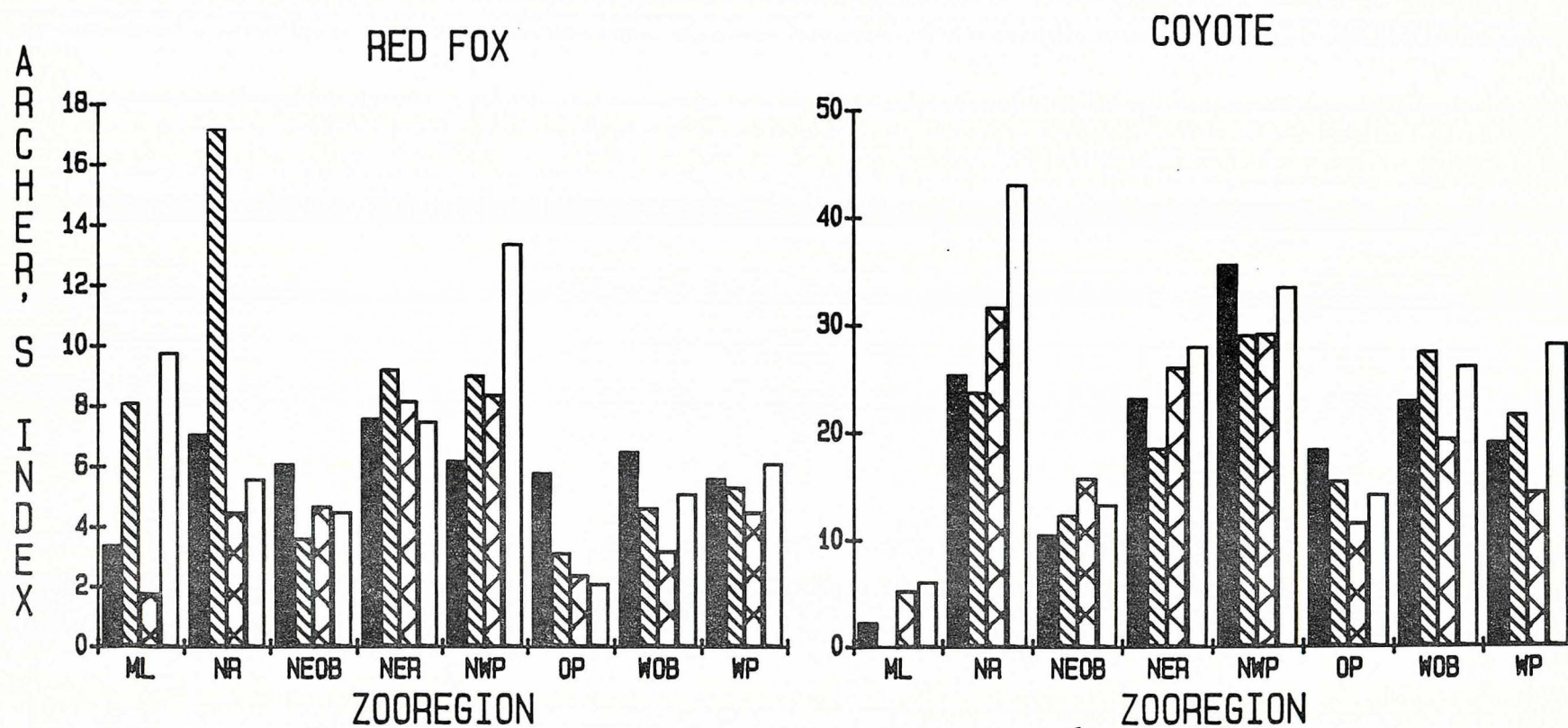


FIGURE 10. Regional observations of opossum and raccoon by cooperating archers, 1983-86.

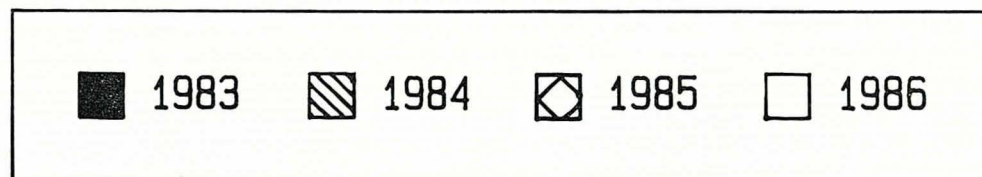
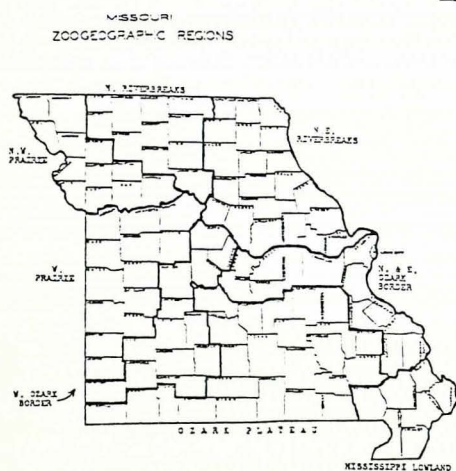
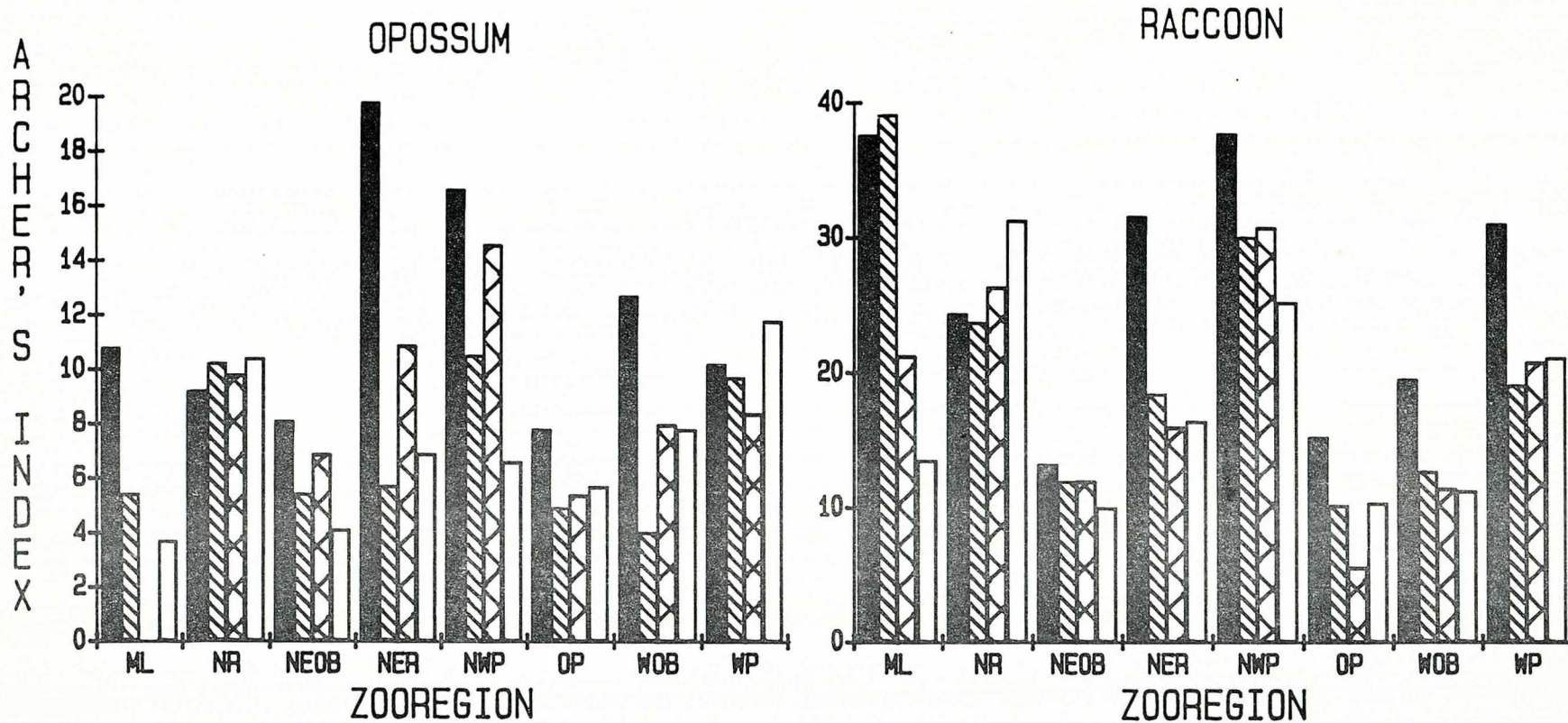


FIGURE 11. Regional observations of squirrel and striped skunk by cooperating archers, 1983-85.

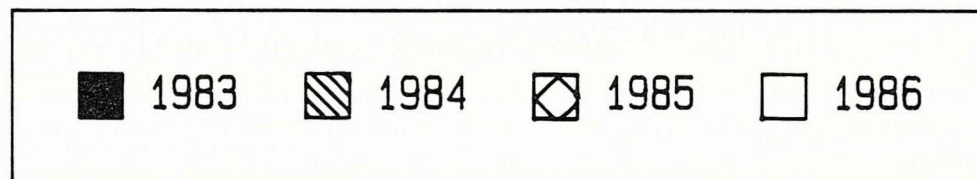
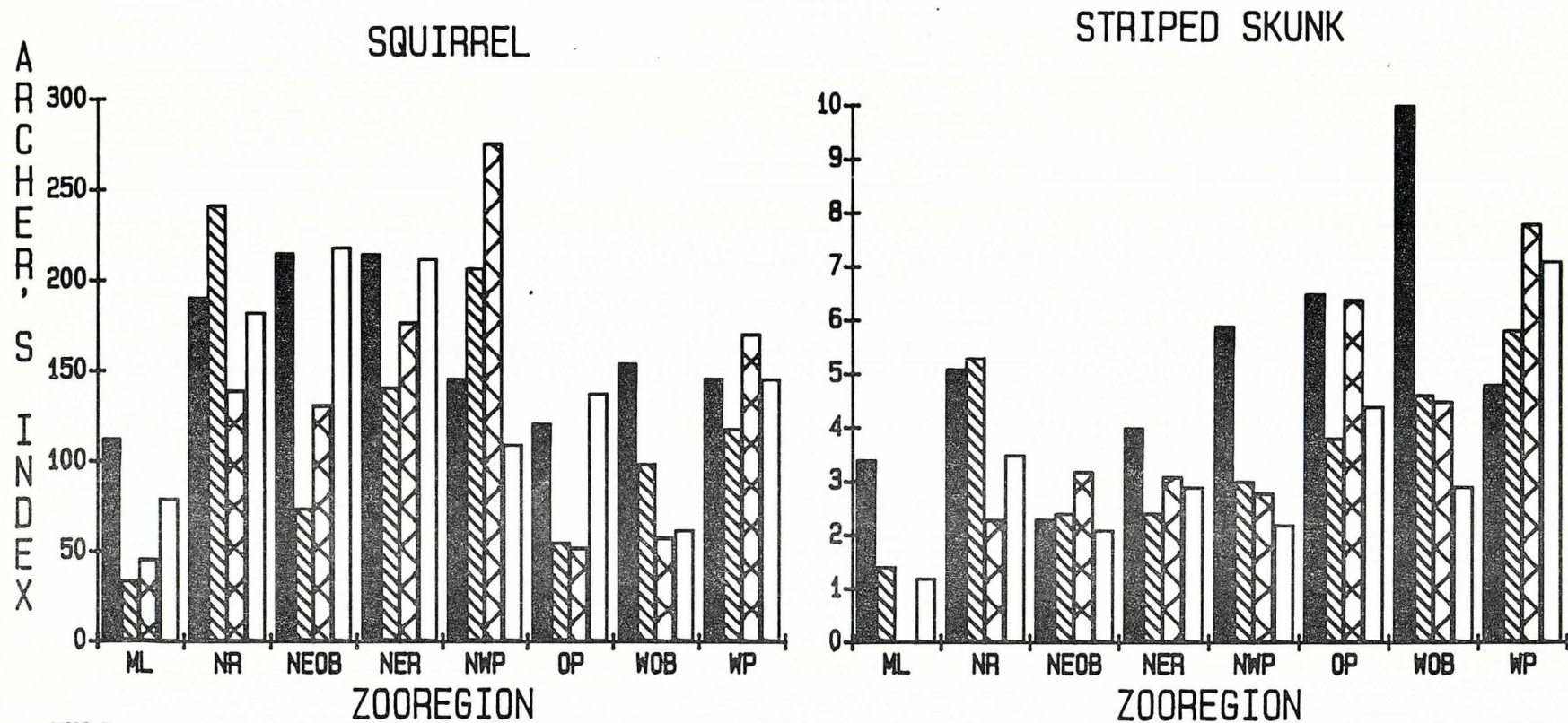
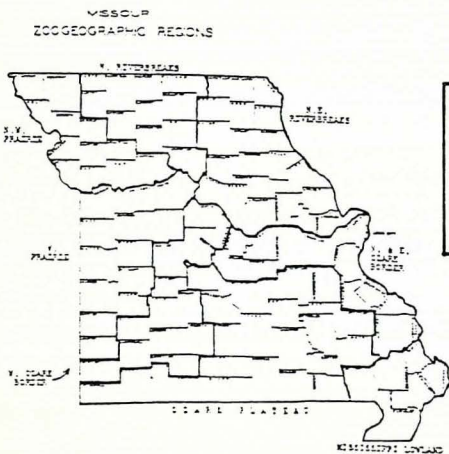
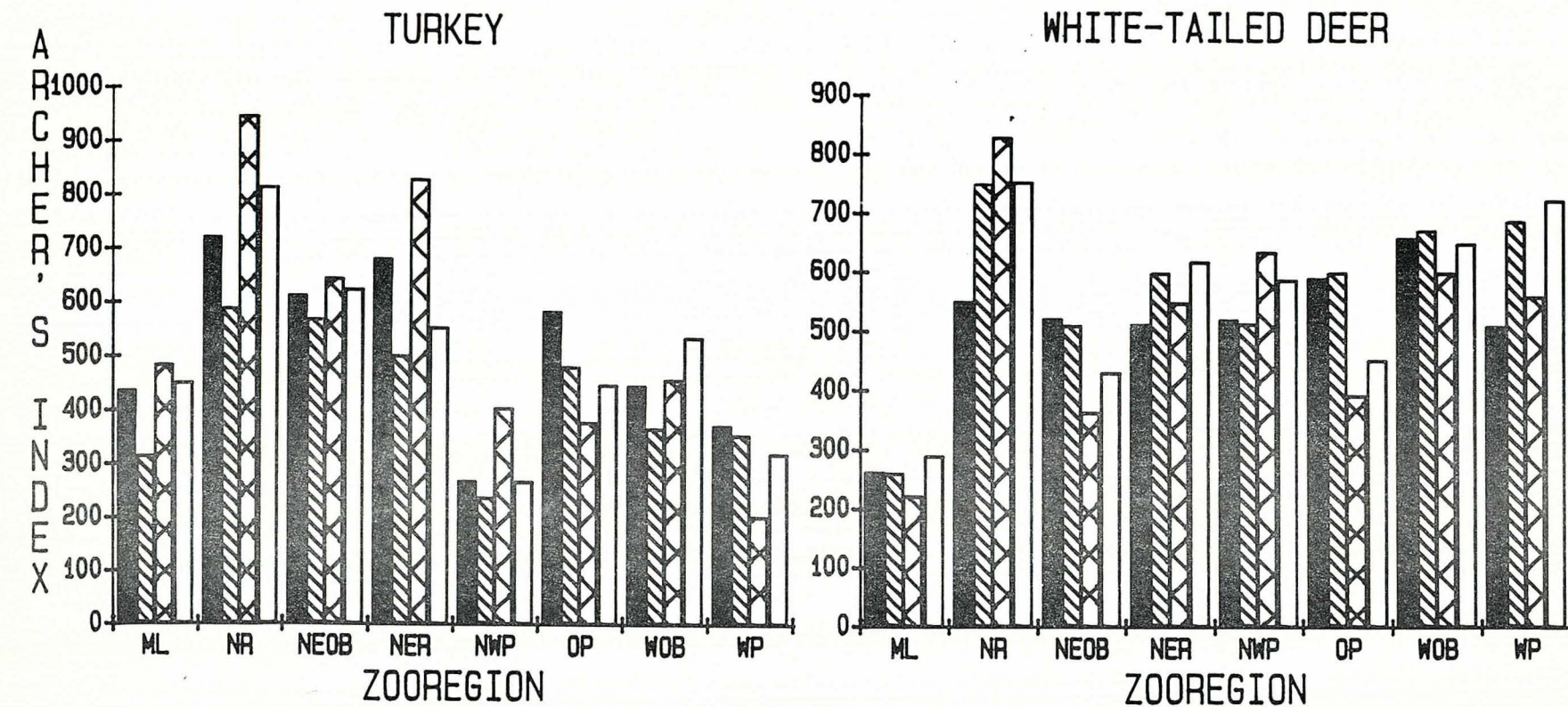
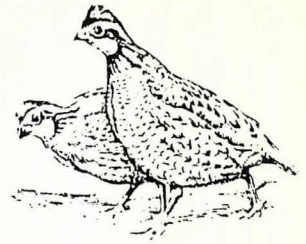


FIGURE 12. Regional observations of wild turkey and white-tailed deer by cooperating archers, 1983-86.



BOBWHITE QUAIL



From 1947 through 1982, the rural mail-carrier survey (RMCS) was used to estimate quail production and forecast fall harvests. The RMCS was discontinued because neither routes nor observers were standardized and habitat and weather conditions were not measured or standardized.

Since 1983, a standardized August quail roadside survey has been conducted to provide a forecast of fall harvest. Standardized 30-mile routes are censused under specific weather guidelines from August 1 - 15. Because the survey has been conducted for only 5 years, its reliability for predicting the upcoming season is untested. However, it is reasonable to assume that quail harvest should be highly correlated with production. Results of the 1987 August quail roadside survey (Figure 13) include production indexes and relative changes in these indexes from 1986. The statewide P.I. in 1987 was 1.14 broods per 30 miles of route, an increase of 23% over 1986.

To assess long-term quail population trends, a post-season mail survey of small game hunters is conducted (Figure 14). This survey provides statewide estimates of harvest and hunting effort.

Another survey that provides insight into hunting trends is the quail hunter cooperator survey. This is our longest-running quail survey, having been conducted in some form since 1938. Several hundred quail hunters report on all quail hunts, including counties, dates, party sizes, hours hunted, coveys flushed, and birds killed. Data provided by cooperators are used to develop a hunting success index, calculated as the number of hours hunted per covey flushed. A covey per hour is considered excellent hunting, a covey per 2 hours average, and a covey per 3 hours poor. Hunting indexes, which should reflect negative effects of harsh winter weather and poor habitat, are presented by region for the years 1983-87 in Table 7.

FIGURE 13. Production indexes (P.I.) and relative changes of 1987 August quail roadside survey.

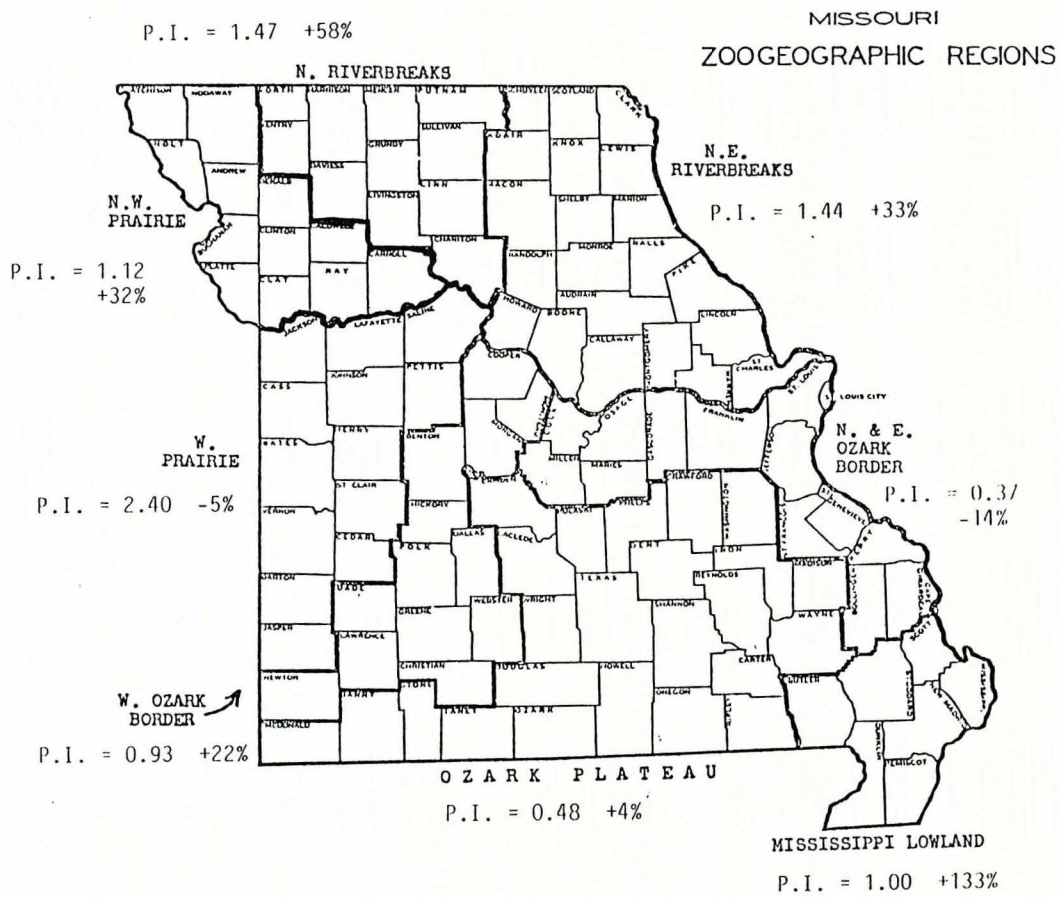


Figure 14. Quail harvests and hunter numbers, 1967-1985, estimated by small game mail survey.

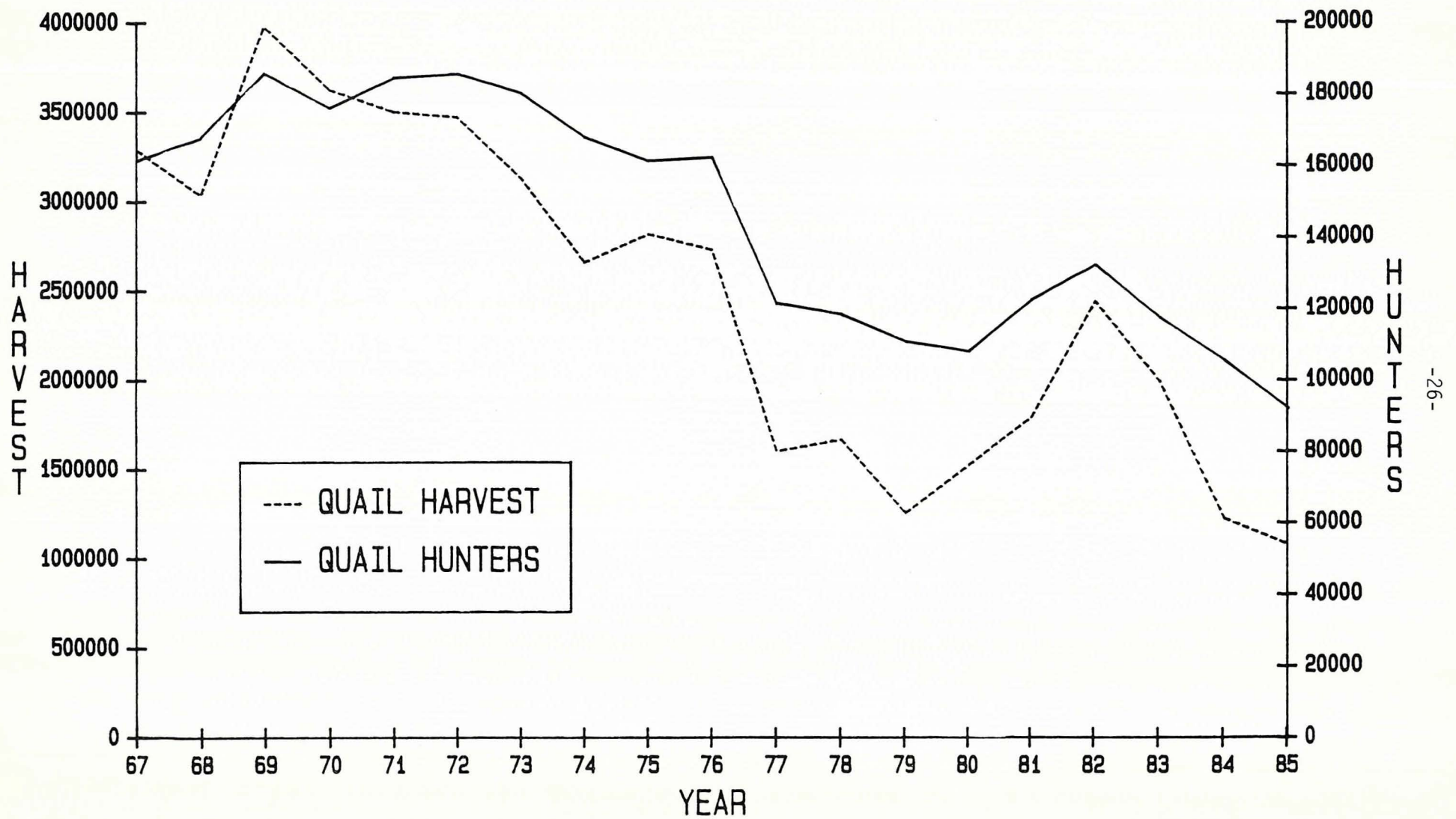
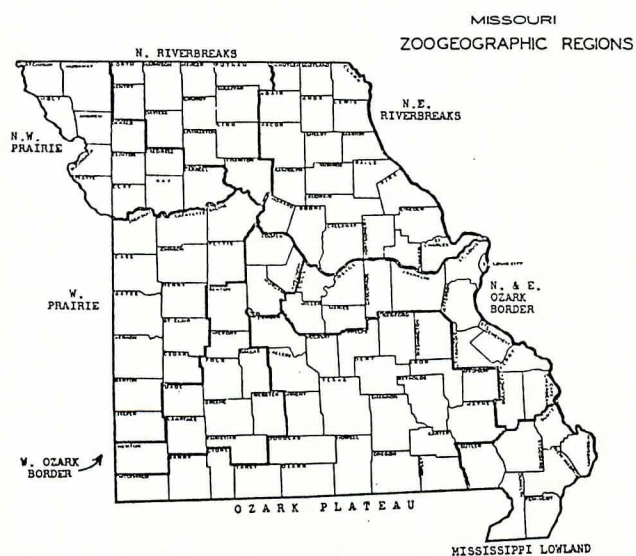
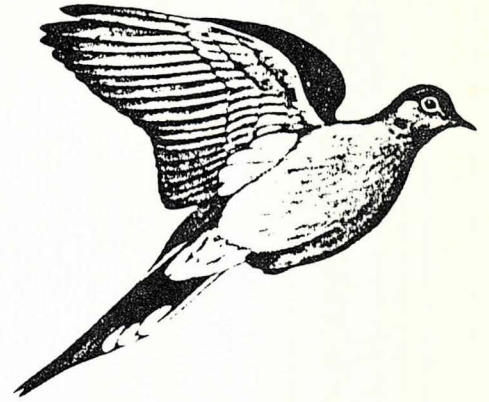


TABLE 7. Hunting indexes (no. hours/covey flushed) from quail hunter cooperator surveys, 1983-87.

Zoogeographic Region	NUMBER OF HOURS PER COVEY FLUSH			
	1983-84	1984-85	1985-86	1986-87
Northwest Prairie	1.1	1.3	1.1	1.1
Northern Riverbreaks	1.0	1.2	1.0	1.1
Northeastern Riverbreaks	1.2	1.7	1.5	1.4
Western Prairie	1.0	1.4	1.2	1.2
Western Ozark Border	1.1	2.0	1.6	1.6
Ozark Plateau	1.1	3.0	2.8	1.8
Northern & Eastern Ozark Border	1.3	1.8	1.5	1.6
Mississippi Lowland	1.4	1.5	1.8	1.7
STATEWIDE	1.1	1.6	1.4	1.3

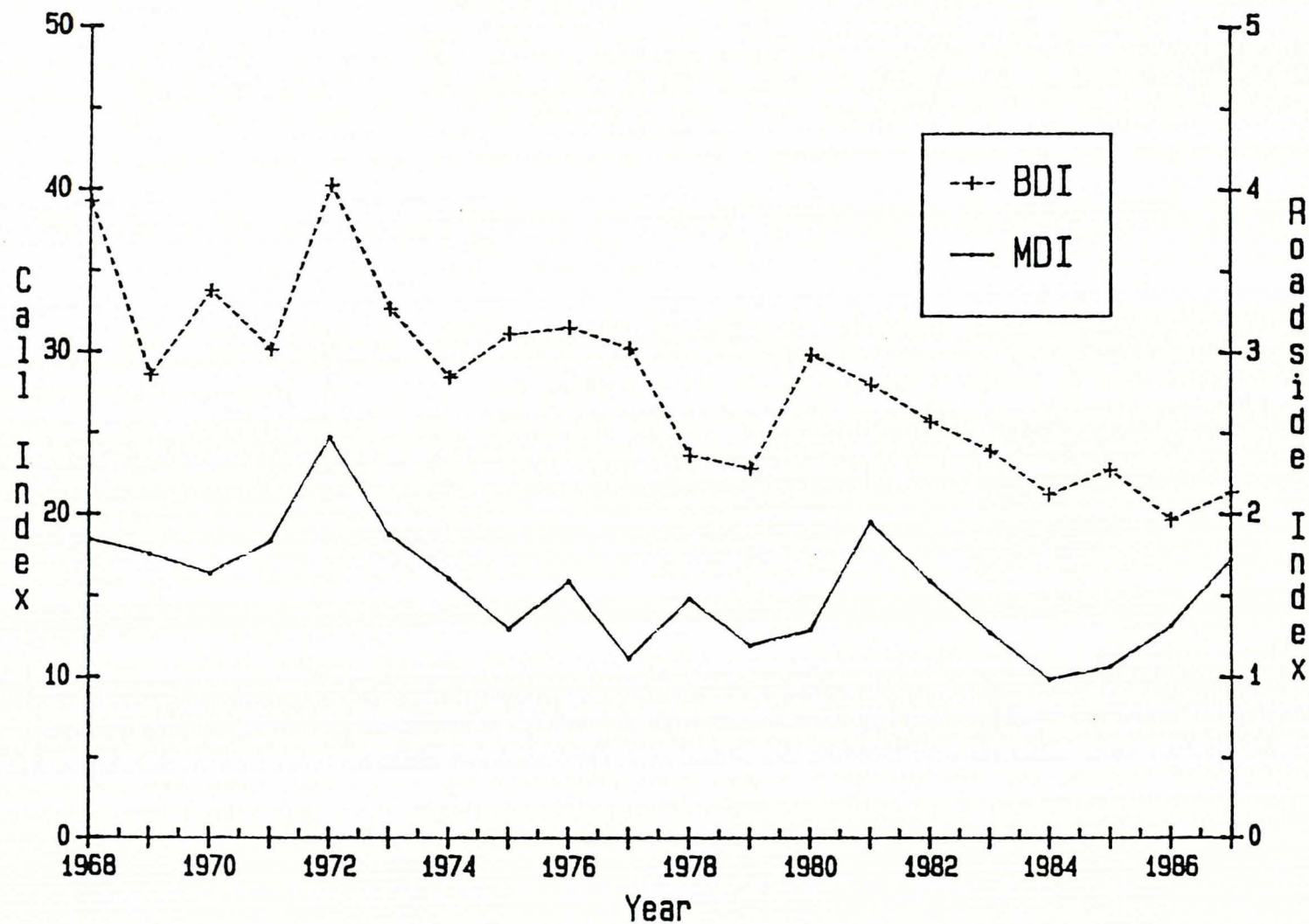




MOURNING DOVE

The Department annually assists the U.S. Fish and Wildlife Service in conducting the breeding dove call-count in May. The number of doves heard calling along 20-mile standard routes is averaged to evaluate a breeding dove index (BDI). The Department then conducts a more intensive dove census in June. Birds observed along 20-mile routes in 112 counties are counted to determine a spring status indicator. This index is the mean number of doves per mile (MDI). Between 1986 and 1987, both the BDI and MDI show increases (Figure 15). Fall dove populations will be better this year than in the past three years. Hunting prospects are bright.

FIGURE 15. Mean number of breeding doves heard along 20-mile routes in May (BDI) and mean number of doves seen per mile in June (MDI) in Missouri, 1968-1987.



RING-NECKED PHEASANT

Late summer (August 1-15) roadside surveys are conducted by Conservation Agents along 30-mile routes in 112 Missouri counties. Observers record cocks, hens with broods, hens without broods, and number and age of chicks as they drive. The mean number of pheasant broods seen per 30 miles provides a production index (P.I.) and is our best indicator of fall pheasant populations. This survey has been operated since 1979 and indexes have been calculated for each zoogeographic region to date (Table 8). For this year, the statewide P.I. is 1.3, a 70% increase from 1986 and a 13% decline from the eight-year mean. There should be more pheasants available for hunters this November than last year.

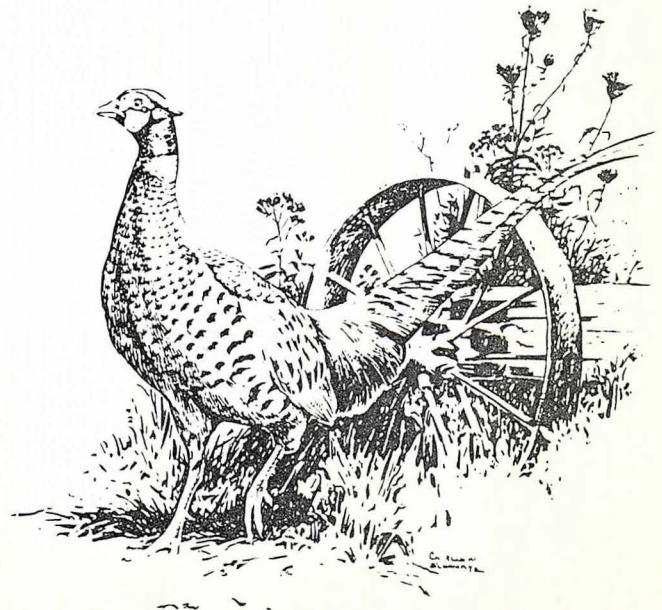


TABLE 8. August roadside mean number of ring-necked pheasant broods per 30 miles, production index (P.I.), by zoogeographic region in Missouri, 1979-1987.

Zoogeographic Region	P.I. BY YEAR									% Change	
	1979	1980	1981	1982	1983	1984	1985	1986	1987	% Change ¹ in P.I. 1986-87	% Change in P.I. 8-Year Mean-87
Northern Zone											
NWP	2.8	3.2	2.3	1.0	1.0	0.3	1.4	0.9	0.7	-33	-56
NR	1.1	2.0	1.8	1.2	1.9	1.0	2.0	1.3	1.4	+38	-7
NER	2.5	1.5	1.1	1.6	1.4	0.9	2.1	0.9	1.9	+167	+27
WP	--	--	--	--	0.0	0.0	0.5	2.0	3.5	+75	--
Southern Zone											
ML	--	--	3.3	2.6	1.2	0.3	0.2	0.7	1.1	+86	-21 ²
STATEWIDE	1.8	2.0	1.7	1.2	1.5	1.3	1.6	1.0	1.3	+70	-13

¹ Comparison made without data from 21 new routes.

² 6-Year Mean.

NWP = Northwestern Prairie
 NR = Northern Riverbreaks
 NER = Northeastern Riverbreaks
 WP = Western Prairie
 ML = Mississippi Lowland

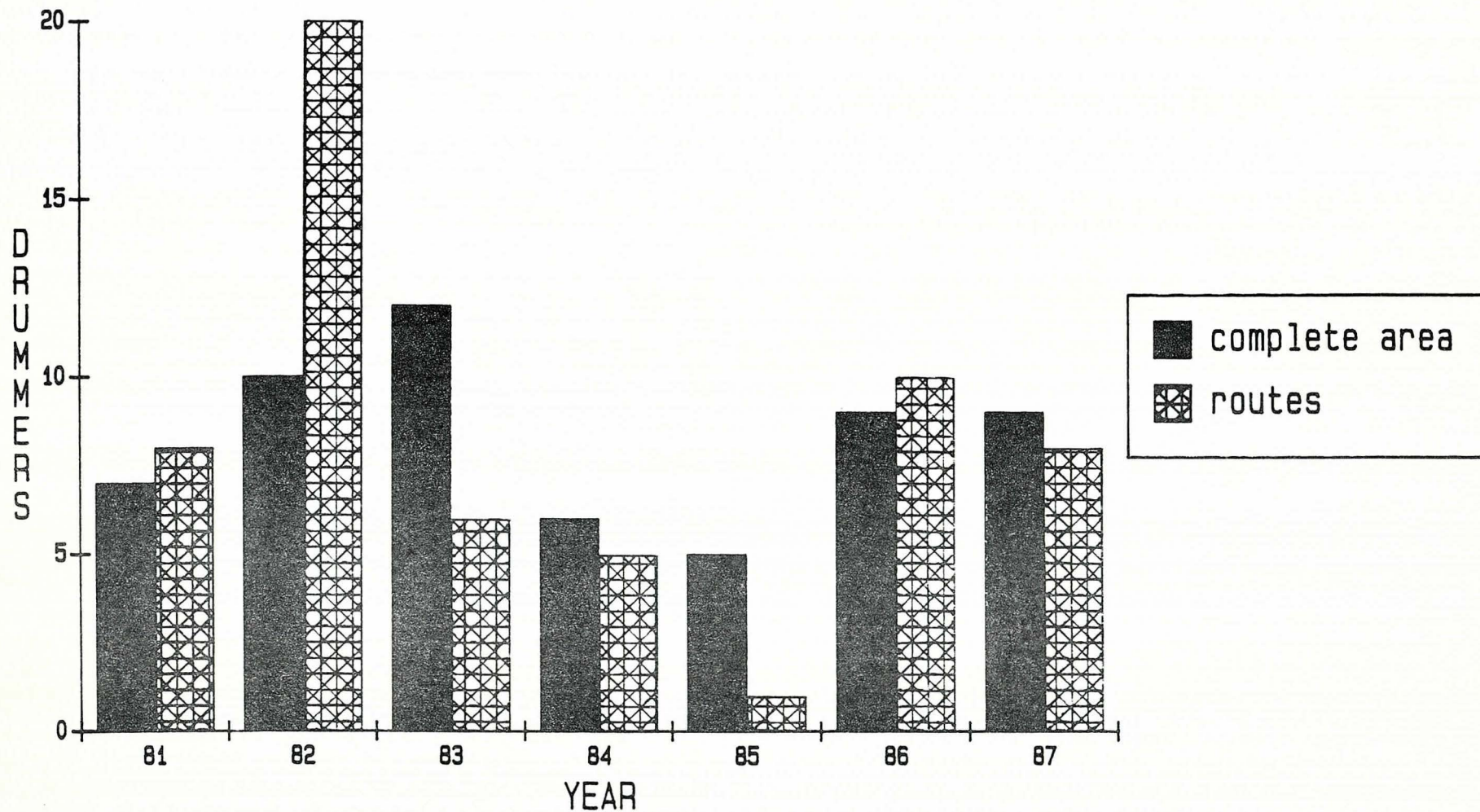




RUFFED GROUSE

Ruffed grouse population trends are monitored through spring drumming counts. Two types of counts are conducted, drumming routes and complete area counts. Complete area counts are censuses of 1000 acre tracts in which all drumming grouse on the tract are located. Drumming routes function as more of an index. Annual variation is often seen in the numbers of drumming males on an area. Within the grouse hunting zone densities on the Daniel Boone State Forest can be used to predict fall hunting conditions. These densities were stable in 1987 (Figure 16). Assuming normal production this past spring prospects for the 1987 grouse season are excellent.

FIGURE 16. SPRING DRUMMING DATA -- DANIEL BOONE S.F.



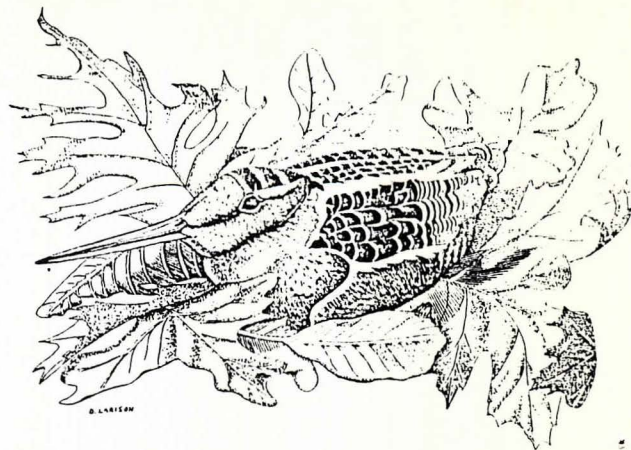
WILD TURKEY

Harvest data and an annual brood survey are used to monitor wild turkey population trends (Table 9). Brood survey cards are sent to landowners and Department personnel during June, July, and August. A ratio of the number of poults per hen is calculated from brood observations to provide an index of production. Average production over the last 28 years has been 2.9 poults per hen. Preliminary indications for 1987 are for above average production. Prospects for fall hunting are excellent.



TABLE 9. Spring Turkey Harvest Data, 1960-1987

Year	No. Of Turkeys Killed	No. Of Hunters	% Success	No. Of Counties Open	Length Of Season	% Subadult	Summer Poult:Hen Ratio
1959	--	--	--	--	--	--	2.3:1
1960	94	698	12	14	3 Days	23	0.8:1
1961	154	1,001	13	14	3 Days	8	2.8:1
1962	182	1,408	12	16	3 Days	28	2.3:1
1963	357	1,828	18	19	4 Days	23	2.4:1
1964	369	2,961	11	22	4 Days	24	1.7:1
1965	476	2,982	15	25	4 Days	17	3.2:1
1966	576	4,873	11	29	5 Days	33	2.2:1
1967	1,191	6,702	17	32	7 Days	22	2.2:1
1968	1,270	8,078	15	35	5 Days	22	2.3:1
1969	959	7,616	12	38	5 Days	23	2.9:1
1970	1,607	10,073	15	41	7 Days	29	3.3:1
1971	2,864	12,311	23	44	11 Days	34	4.6:1
1972	4,457	20,077	22	53	14 Days	47	2.8:1
1973	5,739	29,639	17	63	13 Days	28	1.7:1
1974	5,291	26,374	18	67	13 Days	17	3.3:1
1975	5,546	28,619	18	74	14 Days	34	4.0:1
1976	7,851	35,871	19	79	14 Days	41	2.2:1
1977	9,974	36,599	23	86	14 Days	22	4.2:1
1978	10,146	41,909	20	89	14 Days	54	3.8:1
1979	13,741	44,401	26	90	14 Days	38	3.8:1
1980	16,722	55,864	26	93	14 Days	35	3.5:1
1981	22,319	60,610	31	99	14 Days	25	3.6:1
1982	17,744	62,579	24	100	14 Days	37	3.1:1
1983	19,063	67,768	22	101	14 Days	25	2.4:1
1984	19,568	71,331	21	104	14 Days	22	2.4:1
1985	24,770	65,054	25	114	14 Days	35	4.3:1
1986	30,965	80,702	32	114	14 Days	45	3.6:1
1987	35,951	88,762	33	114	14 Days	28	--

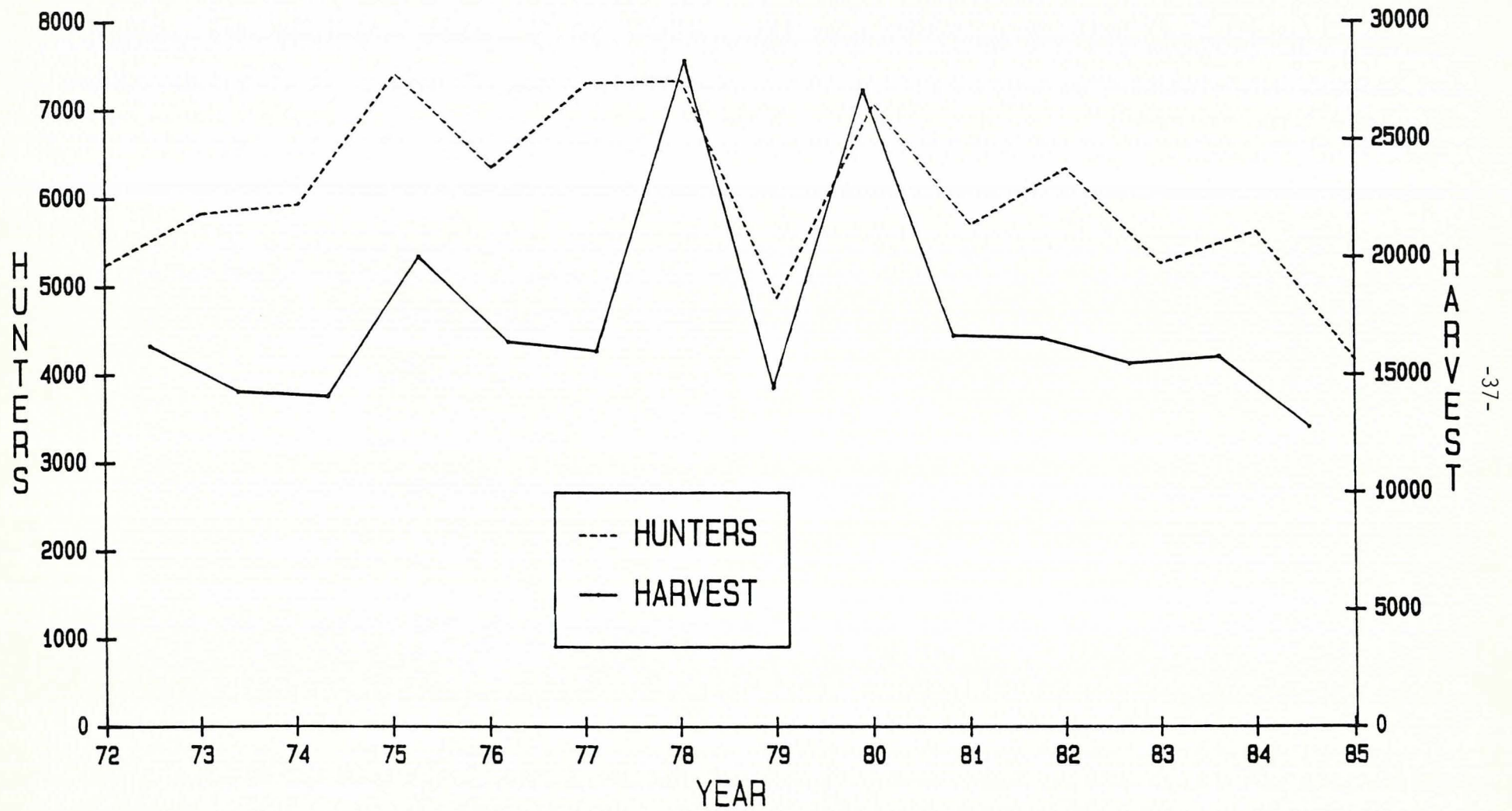


WOODCOCK

Woodcock harvest is monitored through the small game harvest survey (Figure 17). Predictions for fall hunting are based primarily on data from northern states. These data include singing ground surveys conducted in the spring breeding season and wing collection surveys, the results of which provide an index to recruitment during the previous year. These data are collected through the U.S. Fish and Wildlife Service. For the 1987 season, the outlook is optimistic as breeding populations indices continue to increase from a low in 1984. While annual production affects woodcock hunting in Missouri, weather patterns often have a major influence on harvest due to effects on the timing of fall migrations.

FIGURE 17

ANNUAL WOODCOCK HARVEST AND HUNTER NUMBERS



WHITE-TAILED DEER



Deer management decisions are based on the following trend indicators:

1. annual numbers of road-killed deer (Table 10, Figure 18)
2. percentage of any-deer permit holders successful harvesting a deer (Table 11)
3. antlered deer harvests (Table 11)
4. agent responses to questionnaires concerning county deer herd levels and crop damage (Table 12)

Collection methods and limitations of each include:

Road-killed Deer

Data from road-killed deer are obtained from 2 sources, the Missouri Highway and Transportation Commission which picks up approximately 1/3 of the reported road-killed deer, and MDC agents who account for most of the remainder. The road kill trend indicator can be (and has been) biased by inconsistent collection procedures. Statewide, however, numbers of roadkills parallel harvests closely. We have made efforts to standardize data collection procedures and expect that future road-kill data will be a useful trend indicator by deer management unit.

Any-deer Hunter Success

Hunter success rates are a reflection of deer abundance. Weather may affect deer harvest on any one day, however, over an entire season, poor days are generally compensated for by good days, making these effects minimal overall. Relative progress of the corn harvest can impact hunter success. During wet falls, delayed corn harvest can leave much standing corn available as escape cover, reducing hunter success. However, in most years, late corn harvests do not occur.

Antlered Deer Harvest

The biggest problem with antlered deer harvest is that it fluctuates not only with deer abundance but also with hunter numbers. We do not annually collect information on hunter densities in our deer management units, only during years when we conduct a post-season mail survey (usually biennial). As a result, this index is only marginally useful as a deer trend indicator for our deer management units.

Agent Questionnaires

Questionnaires concerning deer densities and crop depredations are sent annually to conservation agents. Conservation agents are closest to local conditions and have a "feel" for gross trends in the deer population in their respective counties. The agents also handle most crop damage problems. These reports provide useful information but are admittedly subjective evaluations and must be used somewhat cautiously.

Based on the data collected using the methods described above deer hunting prospects for both archers and firearms hunters in 1987 are excellent.

Table 10. Adjusted Road-Kill Data Using Natural Divisions

A. Statewide Road-kill Data

DEER HIGHWAY KILLS 1978-1986 ADJUSTED ROAD KILLS PER 1,000,000,000 MILES TRAVELED STATEWIDE								
ADJ_78	ADJ_79	ADJ_80	ADJ_81	ADJ_82	ADJ_83	ADJ_84	ADJ_85	ADJ_86
125.043	134.399	117.022	111.201	136.56	157.156	191.85	177.546	192.919

B. Road-kills by Natural Divisions

DEER HIGHWAY KILLS 1978-1986 ADJUSTED ROAD KILLS PER 1,000,000,000 MILES TRAVELED BY NATURAL REGIONS									
REGION	ADJ_78	ADJ_79	ADJ_80	ADJ_81	ADJ_82	ADJ_83	ADJ_84	ADJ_85	ADJ_86
GLACIATE PLAINS	146.562	147.265	151.254	140.325	157.682	177.387	236.459	217.434	255.250
OSAGE PLAINS	156.234	157.844	145.971	149.934	155.496	218.058	256.405	266.940	295.013
OZARK BORDER	85.111	101.261	78.539	72.847	86.195	97.101	123.169	116.597	123.968
MISSISSIPPI LOWLANDS	16.723	17.908	16.534	16.379	19.292	24.339	25.495	29.142	26.755
OZARK	190.999	203.086	159.597	156.290	228.658	272.698	301.044	263.311	266.906

C. Road-kills by Natural Sub-divisions

DEER HIGHWAY KILLS 1978-1986 ADJUSTED ROAD KILLS PER 1,000,000,000 MILES TRAVELED BY NATURAL REGIONS								16:00 WEDNESDAY, MAY 20, 1987			1
OBS	REGION	ADJ_78	ADJ_79	ADJ_80	ADJ_81	ADJ_82	ADJ_83	ADJ_84	ADJ_85	ADJ_86	
1											
2	WEST GLACIATE PL.	57.099	61.772	60.604	66.409	77.737	86.388	116.765	113.810	131.438	
3	GRAND RIVER	381.650	384.467	414.230	327.041	336.991	404.808	539.294	511.102	600.623	
4	EASTERN GLACIATE	375.754	326.334	334.098	316.840	368.304	406.059	517.910	481.396	589.700	
5	LINCOLN HILLS	239.314	305.460	278.763	306.221	334.346	451.470	614.947	361.612	436.845	
6	OSAGE PLAINS	156.234	157.844	145.971	149.934	155.496	218.058	256.405	266.940	295.013	
7	MO. RIVER BORDER	206.200	257.744	191.758	178.889	208.991	236.993	291.301	258.302	266.071	
8	MISS. RIVER BOR.	44.120	48.391	40.194	36.412	43.718	51.799	69.770	70.505	76.184	
9	CROWLEYS RIDGE	51.065	49.782	42.869	47.511	51.207	51.322	45.701	54.147	49.328	
10	LOWLANDS MISS.	1.659	4.136	5.084	3.321	5.667	12.897	16.969	18.705	17.183	
11	SPRINGFIELD PLAT.	92.164	113.015	104.884	97.204	109.980	148.141	168.693	164.775	207.449	
12	UPPER OZARK	263.012	227.164	198.937	200.056	261.042	332.868	325.766	302.854	291.369	
13	ST. FRANCOIS MOUNT.	213.155	205.552	201.540	175.142	316.857	257.488	274.472	397.314	279.937	
14	ELK RIVER	183.684	283.856	155.467	168.871	282.888	298.000	380.448	257.447	252.697	
15	WHITE RIVER	287.742	345.113	169.061	182.402	361.920	377.644	428.320	289.454	279.956	
16	LOWER OZARK	346.665	331.939	280.661	255.132	482.816	494.275	597.305	508.298	446.575	

16:00 WEDNESDAY, MAY 20, 1987 1

FIGURE 18
FIREARM HARVEST AND ADJUSTED ROAD-KILLS

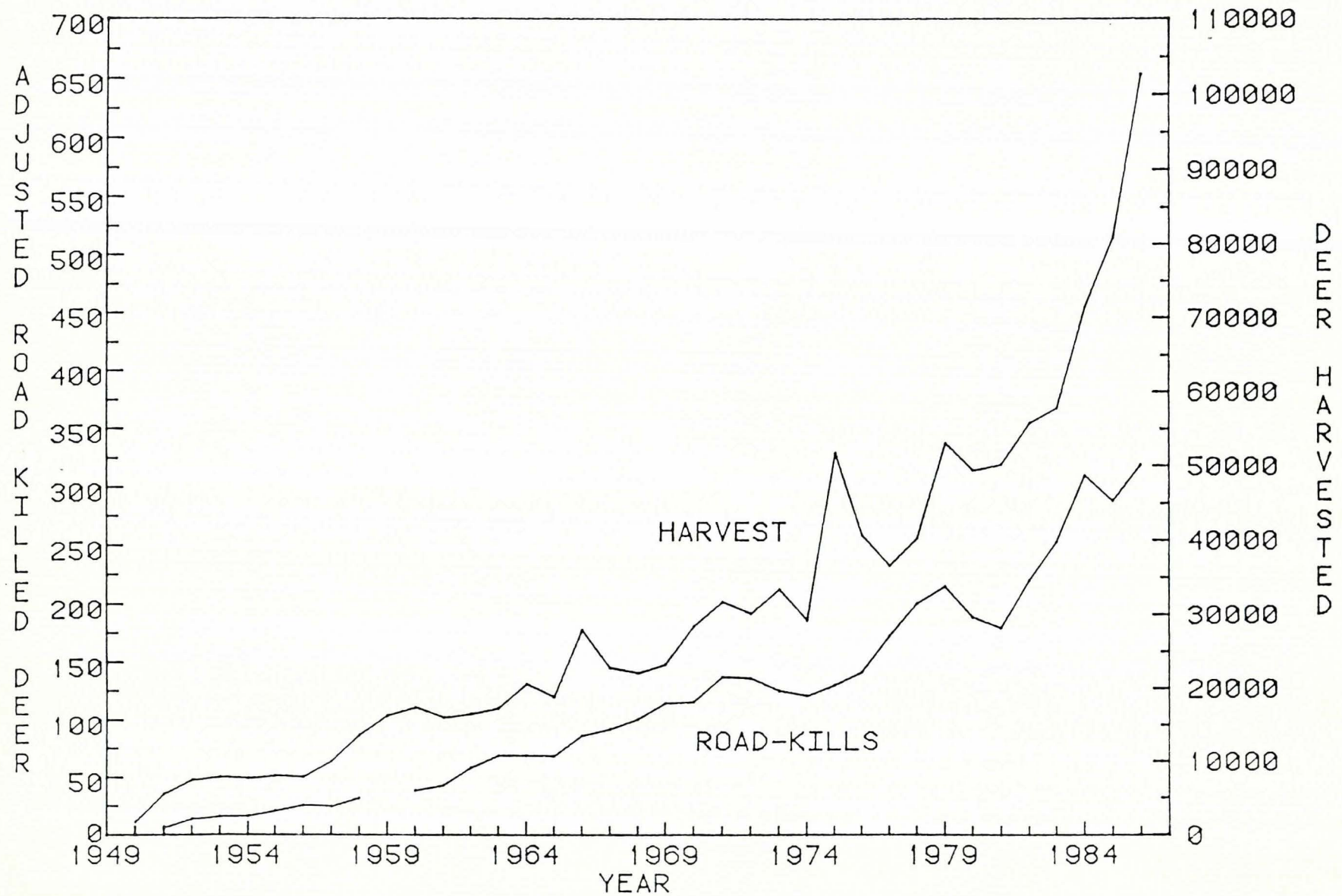


Table 11. Results of 1986 Firearms Deer Season.

Mgmt. Unit	Forest mi ²	Total Doe Harvest		% Of Any-Deer Quota Permittees That Harvested A Doe	Antlered Harvest	Antlered Harvest		Total Harvest	Harvest		% Of Any-Deer Permittees That Were Successful At Harvesting A Deer ¹
		Doe Harvest	Per mi ² Forest			Per mi ² Forest	Forest Harvest		Per mi ² Forest	Forest Harvest	
1	59.4	305	5.1	24	588	9.9	1,030	17.3	52		
2	80.9	424	5.2	23	1,086	13.4	1,715	21.2	53		
3	247.8	1,556	6.3	26	2,464	9.9	4,707	19.0	53		
4	131.1	940	7.2	27	1,946	14.8	3,304	25.2	59		
5	247.4	1,396	5.6	26	1,677	6.8	3,608	14.6	49		
6	112.0	1,029	9.2	28	1,267	11.3	2,746	24.5	57		
7	247.5	2,106	8.5	24	2,436	9.8	5,360	21.7	49		
8	105.9	101	1.0	17	391	3.7	543	5.1	38		
9	30.0	81	2.7	31	385	12.8	485	16.2	58		
10	126.3	512	4.1	24	1,379	10.9	2,064	16.3	45		
11	56.4	116	2.0	14	292	5.2	457	8.1	34		
12	132.0	579	4.4	22	1,018	7.7	1,816	13.8	46		
13	252.0	767	3.0	23	1,268	5.0	2,325	9.2	49		
14	147.7	713	4.8	24	870	5.9	1,895	12.8	48		
15	149.5	407	2.7	23	904	6.0	1,496	10.0	49		
16	247.9	717	2.9	27	1,054	4.2	2,015	8.1	46		
17	281.1	473	1.7	25	1,297	4.6	1,928	6.9	43		
18	176.3	71	0.4	22	502	2.8	600	3.4	63		
19	156.4	145	0.9	27	828	5.3	1,011	6.5	84		
20	178.0	437	2.5	22	648	3.6	1,261	7.1	47		
21	199.8	305	1.5	21	470	2.3	890	4.5	46		
22	143.9	351	2.4	20	515	3.6	979	6.8	40		
23	273.4	861	3.1	21	970	3.5	2,148	7.9	43		
24	285.1	743	2.6	17	778	2.7	1,739	6.1	33		
25	168.3	439	2.6	19	654	3.9	1,258	7.5	39		
26	337.3	1,644	4.9	21	1,721	5.1	3,924	11.6	41		
27	746.5	1,612	2.2	24	2,184	2.9	4,335	5.8	44		
28	882.3	954	1.1	18	1,359	1.5	2,742	3.1	37		
29	550.1	2,343	4.3	22	2,188	4.0	5,371	9.8	41		
30	390.2	1,257	3.2	16	1,368	3.5	3,090	7.9	32		
31	547.6	97	0.2	20	590	1.1	720	1.3	63		
32	478.6	741	1.5	17	1,069	2.2	2,105	4.4	37		
33	165.9	586	3.5	22	827	5.0	1,685	10.2	45		
34	316.2	749	2.4	19	967	3.1	1,981	6.3	39		
35	177.4	173	1.0	20	439	2.5	664	3.7	43		
36	512.0	710	1.4	20	881	1.7	1,835	3.6	35		
37	199.1	110	0.6	16	277	1.4	427	2.1	37		
38	494.7	282	0.6	18	759	1.5	1,170	2.4	43		
39	751.6	894	1.2	20	1,328	1.8	2,520	3.4	33		
40	698.2	1,192	1.7	19	1,370	2.0	2,947	4.2	34		
41	1050.4	208	0.2	23	1,121	1.1	1,420	1.4	51		

Table 11 (Continued):

Mgmt. Unit	Forest mi ²	Total Doe Harvest		% Of Any-Deer Quota Permittees That Harvested A Doe	Antlered Harvest	Antlered Harvest		Harvest		% Of Any-Deer Permittees That Were Successful At Harvesting A Deer ¹
		Doe Harvest	Per mi ² Forest			Per mi ² Forest	Total Harvest	Per mi ² Forest	Total Harvest	
42	1662.3	0	0	—	457	0.3	457	0.3	—	
43	1336.6	704	0.5	21	1,670	1.2	2,664	2.0	37	
44	297.3	549	1.8	17	665	2.2	1,468	4.9	35	
45	146.9	102	0.7	19	194	1.3	331	2.3	40	
46	360.7	706	2.0	19	744	2.1	1,685	4.7	37	
47	135.1	26	0.2	11	116	0.9	148	1.1	26	
48	531.5	761	1.4	14	923	1.7	1,929	3.6	29	
49	776.4	774	1.0	14	981	1.3	2,009	2.6	29	
50	398.6	569	1.4	17	615	1.5	1,348	3.4	31	
51	555.8	760	1.4	17	1,135	2.0	2,171	3.9	34	
52	649.5	925	1.4	20	1,225	1.9	2,492	3.8	37	
53	817.5	65	0.1	23	437	0.5	527	0.6	49	
54	184.7	0	0	—	100	0.5	100	0.5	—	
55	844.9	201	0.2	19	728	0.9	991	1.2	29	
56	66.8	26	0.4	17	106	1.6	139	2.1	32	
57	97.1	0	0	—	104	1.1	104	1.1	—	
TOTAL	21495.9	35,294	1.6	21	54,339	2.5	102,879	4.8	41	

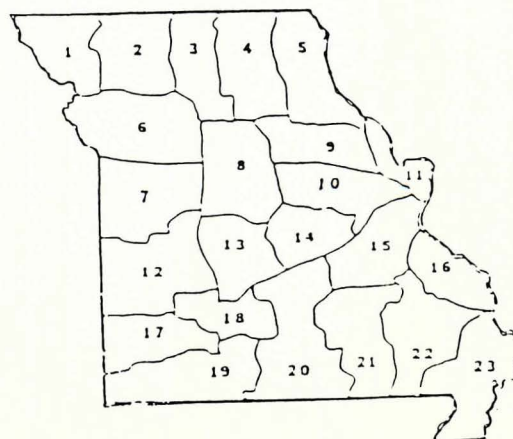
¹ Successful quota any-deer permittee and landowners with an any-deer permit.

TABLE 12. Trend Indicators

Old Mgmt. Unit	% HUNTER SUCCESS WITH ANY-DEER PERMITS			AGENT CROP DAMAGE REPORT		Agent ² Trend Indicator	DOE HARVEST			UNADJUSTED NUMBER OF ROADKILLED DEER		
	1984	1985	1986 ¹	1984	1986		1984	1985	1986 ¹	1984	1985	1986 ¹
1	52	52	53	21	40	I	302	546	729	330	302	353
2	48	50	53	5	14	S-I	532	934	1557	300	336	333
3	57	54	43	15	19	S-I	617	888	1230	234	242	282
4	56	51	51	29	31	I	2055	2825	2951	343	269	435
5	48	44	49	12	17+	I	2096	2823	2496	412	368	426
6	54	45	42	29	44	I	182	399	810	505	509	652
7	---	---	73	8	36+	I	0	31	216	333	356	491
8	47	48	48	15	7	I	417	792	1509	337	394	404
9	59	51	46	17	34	I	391	765	1327	294	260	319
10	37	32	37	105	34	S-I	2979	4100	3529	680	573	614
11	46	52	40	6	7	S-I	99	235	523	186	200	233
12	40	38	40	50	68	I	1627	2960	3523	446	446	469
13	42	37	42	28	33	I	1142	1710	2314	452	358	382
14	59	47	39	37	19	S	642	1194	2512	239	250	305
15	---	---	43	10	7	S	30	228	534	226	260	383
16	42	41	36	36	17	I	591	1059	945	306	319	305
17	---	---	40	10	5	I	0	0	271	198	209	242
18	---	---	40	9	3	I	0	1	558	184	172	221
19	33	27	31	19	10	S-I	1216	1692	2269	414	297	324
20	39	31	34	104	44+	S-I	3107	4102	3788	587	480	420
21	---	48	38	20	4	S-I	15	138	671	114	109	138
22	34	28	35	30	10	S-I	356	570	1012	218	213	260
23	---	---	---	1	0	S-I	0	0	17	35	39	28
<hr/>												
TOTAL	42	38	41	616	503		18396	27992	35291	7373	6961	8019

¹Values for 1986, with the new system of 57 units, were adjusted to conform to the old unit system by grouping new units within approximate boundaries of the old units. Because some new units overlapped more than one of the old units, the proportion of the new unit within each of the old units was estimated and the calculated values were weighted according to these proportions.

²I = increasing
S = stable deer population





MIGRATORY WATERFOWL

Waterfowl that use Missouri wetlands include primarily ducks and geese. Federal, state and provincial wildlife agencies share in the management of these resources. Extensive population and harvest surveys are required annually to monitor population status. The condition of habitats used by breeding ducks as well as winter or breeding population levels of ducks and geese are used to portray continental or flyway trends. These provide broad framework for managing waterfowl resources.

Populations of waterfowl on a statewide or more localized level reflect variable habitat and weather conditions. Hunting success in Missouri is usually related to these local conditions, rather than the status of habitats and populations in the flyway. The data presented provide information concerning continental and/or flyway conditions as well as populations and harvests in Missouri (Tables 13-19, Figure 19).

Hunting opportunity for Canada geese in 1987-88 will be reduced because of a shorter season; 40 days vs. 50 in 1986. The objective is to build numbers of Canada geese by reducing harvest rates. Harvest restrictions on this flock are shared by Manitoba, Minnesota, Iowa and Missouri in an effort to foster EPP growth.

The nesting season of snow geese and small Canada geese, which nest further north than EPP Canada geese, was delayed in 1987. Fall flights of these populations will be comprised of smaller numbers of immature geese. Hunting success will likely be affected.

Fall flights of ducks are essentially the same as in 1986. Summer flooding has affected food conditions on some waterfowl areas and an early crop harvest is anticipated on private land. Fall precipitation will determine the condition of migrating duck habitat in Missouri. Populations of ducks will depend upon these habitat conditions and migration timing.

TABLE 13. Indices [$\times 1000$]² to Waterfowl Habitat, Populations and Harvest, 1977-1987

Index	1987	1986	1985	1984	1983	1982	1981	1980	1979	1978	1977
May Ponds	3,946	5,760	5,610	4,224	5,165	4,642	2,126	2,902	6,381	5,212	3,049
July Ponds	2,058	2,662	2,300	2,525	3,179	2,544	1,331	1,235	2,558	2,217	1,860
Breeding Ducks	35,080	35,034	30,883	38,054	38,598	36,655	38,557	42,198	45,222	41,083	38,044
Breeding Mallards	6,691	6,303	5,475	5,974	7,107	6,684	6,760	8,003	8,354	7,615	8,166
FFI ^b -Total Ducks	74,512	72,685	62,018	79,752	82,727	75,892	77,569	80,375	95,159	89,833	84,778
FFI - Mallards	11,600	10,900 ^c	8,500	10,300	14,058	11,568	10,524	12,459	16,066	13,978	12,807
Total Duck Harvest											
Flyway	—	4,010 ^d	3,966	5,526	5,581	4,715	5,286	5,712	6,197	6,115	5,794
Missouri	—	177	191	245	244	210	232	203	254	240	258
Mallard Harvest											
Flyway	—	1,563	1,533	1,796	2,018	1,782	2,062	2,347	2,346	2,257	2,270
Missouri	—	98	92	114	152	113	120	124	147	121	144
Mid-Winter Survey											
Total Ducks-Flyway	—	4,174	5,063	5,428	3,938	4,611	6,196	5,907	5,274	6,436	4,720
Missouri	—	153	210	164	62	405	219	213	315	157	516
Mallards-Flyway	—	1,924	2,168	1,969	1,440	1,878	2,493	2,622	2,360	3,073	2,605
Missouri	—	136	183	152	50	389	203	197	292	122	485

a. Pond indices, breeding ducks and fall flights estimates from data collected on spring and summer surveys of habitat and breeding ducks in the northern U.S. and Prairie Canada.

b. FFI - fall flight index - preliminary for 1987.

c. Projected flight based on a production index of 1.0.

d. Preliminary harvest estimates for 1986.

TABLE 14. Average Duck Populations on Missouri Wetland Areas, 1970-86*

Month/week	Duck Creek	Ted Shanks	Fountain Grove	Swan Lake	Squaw Creek	Schell-Osage	Montrose
October/1	2,000	1,300	9,200	25,700	14,900	7,600	400
October/2	3,600	2,900	11,800	19,600	18,000	8,600	3,000
October/3	5,500	10,400	12,900	24,600	23,800	16,600	3,300
October/4	10,800	20,800	16,800	36,100	41,700	18,200	9,200
November/1	11,500	29,400	13,400	52,000	123,400	27,100	14,900
November/2	10,700	47,000	15,500	56,800	114,200	32,200	16,300
November/3	12,800	47,900	18,300	60,400	125,500	39,400	28,800
November/4	13,300	70,000	14,700	29,600	153,100	36,400	27,100
December/1	11,600	46,800	8,100	22,600	158,500	37,300	19,000
December/2	8,800	14,300	7,200	27,000	70,300	31,900	34,600
December/3	7,900	---	5,100	6,600	69,800	22,100	39,200
December/4	5,500	---	2,600		21,500	16,700	29,500
January/1	3,900	---	2,600	3,679	20,300	26,300	30,400
January/2	3,000	---	---	---	5,800	14,500	3,300
January/3	3,100	---	---	---	---	---	---
January/4	4,100	---	---	---	---	---	---

* From aerial and ground count surveys.

TABLE 15. Missouri Duck Seasons, 1950-1987 ("0" indicates no FWS survey).

Year	Statewide Seasons	North Zone Seasons	South Zone Seasons	Season Length	Hunters	Regular Season Harvest
1950	11/3-12/7			35	53,000	0
1951	10/26-12/9			45	65,000	0
1952	10/20-12/13			55	57,094	0
1953	10/23-12/16			55	46,338	0
1954	10/22-12/15			55	49,447	0
1955	10/28-1/5			70	75,558	0
1956	10/26-1/3			70	72,437	0
1957	10/25-1/2			70	77,200	0
1958	10/24-1/1			70	73,152	0
1959	11/6-12/25			50	49,214	0
1960	11/1-12/20			50	40,857	0
1961	11/3-12/2			30	32,400	124,599
1962	11/2-11/26			25	22,300	26,136
1963	10/25-11/28			35	27,100	60,427
1964	10/30-12/8			40	32,400	105,689
1965	10/29-12/7			40	30,900	110,652
1966	11/1-12/15			45	34,800	149,445
1967	11/1-12/10			40	46,100	228,350
1968	11/1-11/30			30	35,300	105,962
1969	11/1-11/30			30	43,500	200,422
1970	10/24-12/17			55	50,000	281,573
1971	10/31-12/19			50	49,400	246,324
1972	10/29-12/17			50	49,800	197,761
1973	11/1-12/15			45	45,700	161,226
1974	10/30-12/18 (open noon)			50	49,800	236,976
1975	10/29-12/17 (open noon)			50	52,400	311,620
1976	10/26-12/5 12/26-1/3			45	51,600	20,331
1977		10/25-12/8	11/15-12/29	45	53,100	257,945
1978		10/24-12/12	11/14-1/2	50	51,600	239,751
1979		10/24-12/12	11/14-1/2	50	45,100	253,976
1980	11/1-12/15	10/18-10/22	12/26-12/30	50	39,300	202,477
1981	10/31-12/4	10/17-10/21	12/26-12/30	50	41,200	231,953
1982	10/30-12/13	10/16-10/20	1/8-1/12	50	39,500	209,900
1983		10/15-10/19	11/1-12/4	50	37,700	243,500
		11/1-12/15	12/17-1/1			
1984		10/20-10/24	11/1-12/2	50	37,900	245,174
		11/1-12/15	12/15-1/1			
1985		10/19-10/21	11/2-12/1	40	32,500	177,042
		11/2-12/8	12/27-1/5			
1986		11/1-12/10	11/22-12/14	40	34,200	177,100
			12/27-1/12			
1987		10/31-12/9	11/21-12/13 12/26-1/11	40	0	0
TOTAL					1,724,897	4,989,311

TABLE 16. Average Statewide Duck Harvest/Five-day Periods, 1970-86*

Month/5-day period	Mallards	Wood Ducks	<u>Ten point ducks</u>	Total
October/4 and 5	1,393	2,531	3,567	7,792
October/6	2,669	1,731	3,643	8,602
November/1	3,484	1,058	2,836	7,981
November/2	3,456	471	1,734	6,127
November/3	3,031	316	1,070	4,731
November/4	2,554	146	897	3,867
November/5	3,063	140	840	4,421
November/6	2,505	53	576	3,334
December/1	2,188	57	456	2,860
December/2	1,668	36	337	2,210
December/3	1,517	1	147	1,785
December/4	1,076	0	103	1,269
December/5	197	0	53	347
December/6	486	0	28	654
January/1,2 or 3	196	0	10	209

*U.S. Fish and Wildlife Service estimates.

TABLE 17. Hunter Success and Hunter Pressure on MDC Areas, 1970-86¹

Area	TOTAL DUCKS/HUNTERS							HUNTERS/DAYS						
	Oct.	1-15	16-30	1-15	16-31	Jan.	Ave.	Oct.	1-15	16-30	1-15	16-31	Jan.	Ave.
Otter Slough ³		.87	.64	.54	.85	.75	.74	*	14.99	12.64	8.46	8.32	10.10	12.35
Duck Creek	1.53	1.30	1.02	.73	.49	.34	1.00	111.66	128.85	98.43	82.08	68.91	73.10	100.57
Ted Shanks ²	1.22	1.20	.92	.72	.58	.00	.99	95.63	105.79	84.08	61.11	52.19	0.00	86.24
Fountain Grove	1.16	.74	.70	.57	.78	.00	.72	132.72	156.11	86.43	47.25	26.63	0.00	102.38
Schell-Osage	2.00	1.45	1.19	.98	.94	.00	1.29	86.71	73.26	63.82	45.58	39.18	0.00	63.77
Montrose	.78	.95	1.03	1.05	1.66	.00	1.00	28.49	28.66	25.49	23.10	13.81	0.00	25.93

¹ Based upon data from biological check stations.

² 1976-86

³ 1983-86

TABLE 18. Canada Goose Population Levels in the Swan Lake Zone, 1954-86.

Year	Mid October	Early November	Early December	Mid December	Early January	Peak Population
1954	27,100	63,500	103,000	43,000	30,250	104,000
1955	96,000	57,000	21,050	15,100	16,000	133,000
1956	54,945	47,950	36,975	31,745	12,500	55,400
1957	21,500	42,025	17,500	28,250	9,070	42,025
1958	45,600	44,300	10,400	25,900	18,700	59,350
1959	45,600	57,950	32,800	28,240	27,590	57,950
1960	88,405	60,500	45,200	50,000	43,575	88,405
1961	73,600	71,600	54,900	38,300	39,000	73,600
1962	74,450	107,950	95,200	102,500	77,200	118,200
1963	111,800	122,000	124,150	84,650	80,150	130,225
1964	99,110	119,000	45,730	50,855	62,290	121,450
1965	90,935	89,980	83,250	110,750	83,360	119,350
1966	102,775	137,050	104,350	123,235	105,850	139,525
1967	105,800	118,965	106,605	92,020	95,210	127,265
1968	88,775	137,500	14,500	120,730	116,715	137,500
1969	87,050	105,100	96,370	91,950	98,070	110,200
1970	77,200	104,425	114,800	95,300	97,400	114,800
1971	83,075	124,195	140,400	119,625	156,700	156,700
1972	114,935	138,865	145,820	150,570	125,920	152,550
1973	91,350	147,200	160,800	174,900	125,920	174,900
1974	105,300	160,350	161,225	163,650	150,000	163,650
1975	99,625	171,225	189,475	171,100	176,650	189,475
1976	92,300	169,250	192,925	210,350	113,475	210,350
1977	108,440	114,000	189,300	209,200	232,210	232,210
1978	100,700	124,250	132,250	143,725	60,325	143,725
1979	101,850	96,175	127,500	116,550	57,025	127,500
1980	43,600	81,750	129,875	82,025	45,500	129,875
1981	82,950	109,800	96,200	83,050	23,975	122,900
1982	91,625	137,300	107,250	163,950	79,775	163,950
1983	83,675	134,200	78,100	107,750	8,500	134,200
1984	66,350	76,375	65,640	75,500	17,880	76,375
1985	79,625	90,725	41,750	33,125	38,400	90,725
1986	79,325	45,825	25,300	40,600	29,000	79,325

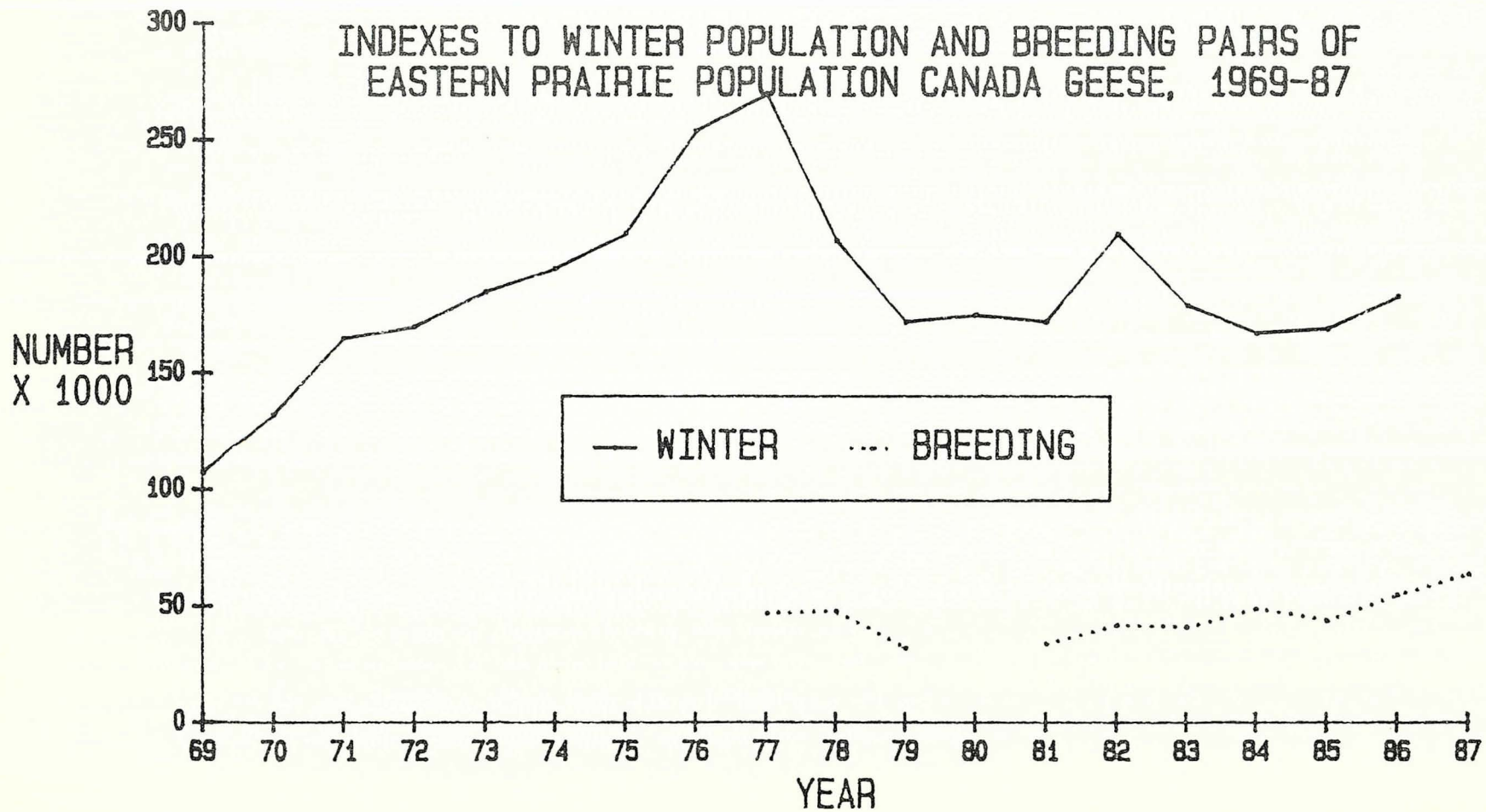
TABLE 19. Missouri Goose Harvest, 1948-1986.*

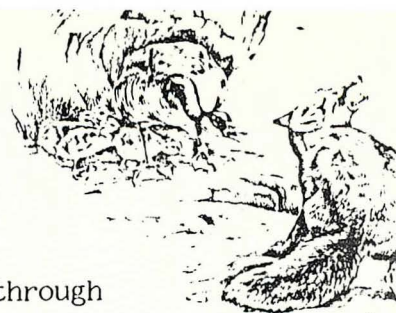
Year	Statewide Harvest	Canada Geese	Snow Geese	Blue Geese
1948	0	0	0	0
1949	0	0	0	0
1950	0	0	0	0
1951	0	0	0	0
1952	0	0	0	0
1953	0	0	0	0
1954	0	0	0	0
1955	0	0	0	0
1956	0	0	0	0
1957	0	0	0	0
1958	0	0	0	0
1959	34,811	0	0	0
1960	56,016	0	0	0
1961	29,200	0	0	0
1962	24,295	22,695	536	886
1963	43,110	34,315	4,548	3,445
1964	41,074	33,625	5,209	2,126
1965	40,102	32,510	4,002	3,590
1966	63,515	40,305	11,586	11,239
1967	79,911	71,877	4,651	3,383
1968	61,024	47,181	8,044	5,406
1969	59,290	39,753	9,608	9,675
1970	58,442	33,505	15,490	9,302
1971	65,349	37,927	17,321	10,101
1972	55,156	41,000	8,400	4,600
1973	60,909	40,282	11,561	8,900
1974	89,893	64,360	15,494	10,040
1975	116,736	81,825	17,773	15,139
1976	71,024	59,907	6,306	4,476
1977	84,553	65,032	10,737	8,785
1978	79,544	68,275	5,779	5,491
1979	73,113	57,400	8,780	6,654
1980	50,881	44,742	2,512	3,240
1981	55,358	45,027	4,963	5,166
1982	52,266	42,083	4,011	5,659
1983	61,674	36,677	13,973	10,177
1984	56,325	41,489	7,496	7,204
1985	52,610	36,948	8,017	6,866
1986	57,176	30,410	13,823	11,445

*Estimates from U.S. Fish and Wildlife Service harvest surveys.

FIGURE 19

INDEXES TO WINTER POPULATION AND BREEDING PAIRS OF
EASTERN PRAIRIE POPULATION CANADA GEESE, 1969-87





GIANT CANADA GEESE

The population status of giant Canada geese is determined through periodic censusing on public and private land, banding, and annual nesting surveys on public lands.

A periodic census conducted by Conservation Agents provides an index to the general population status and distribution within Missouri. During the 1987 breeding season (April 15 - May 30), Canada geese were observed in 65 counties, ten more than the previous (1982) survey (Figure 20). This compares with observations in 29 and 36 counties during 1967 and 1977, respectively.

Numbers of geese captured during annual banding operations reflect the population status on a particular area. During 1975-1987 the number of geese captured at 10-12 locations increased from 2,174 to 4,178 (Figure 21). Only 2 years show apparent decreases in Canada goose numbers. These can be explained by the omission of the Schell-Osage WA from banding operations in 1977 and 1985 due to flood conditions and the omission of the Trimble WA after 1985 due to inundation by Smithville Reservoir.

A survey of wildlife area managers indicates that giant Canada geese are now present on at least 24 Wildlife or Fisheries areas (Table 20). Breeding populations were established (5 or more nests) on 14 areas and 1-3 nests or non-breeding birds were observed on 10 additional areas. As new areas are developed (wetlands, fishing lakes, etc.) opportunities for viewing and hunting Canada geese on public lands will continue to increase.

Current information indicates that giant Canada goose populations are increasing and that statewide distribution continues to expand. Future population growth will likely continue but will eventually be dependent upon a combination of suitable habitat, human tolerance and harvest.

TABLE 20. Canada Goose Survey Results in MDC Wildlife Areas - Spring 1987

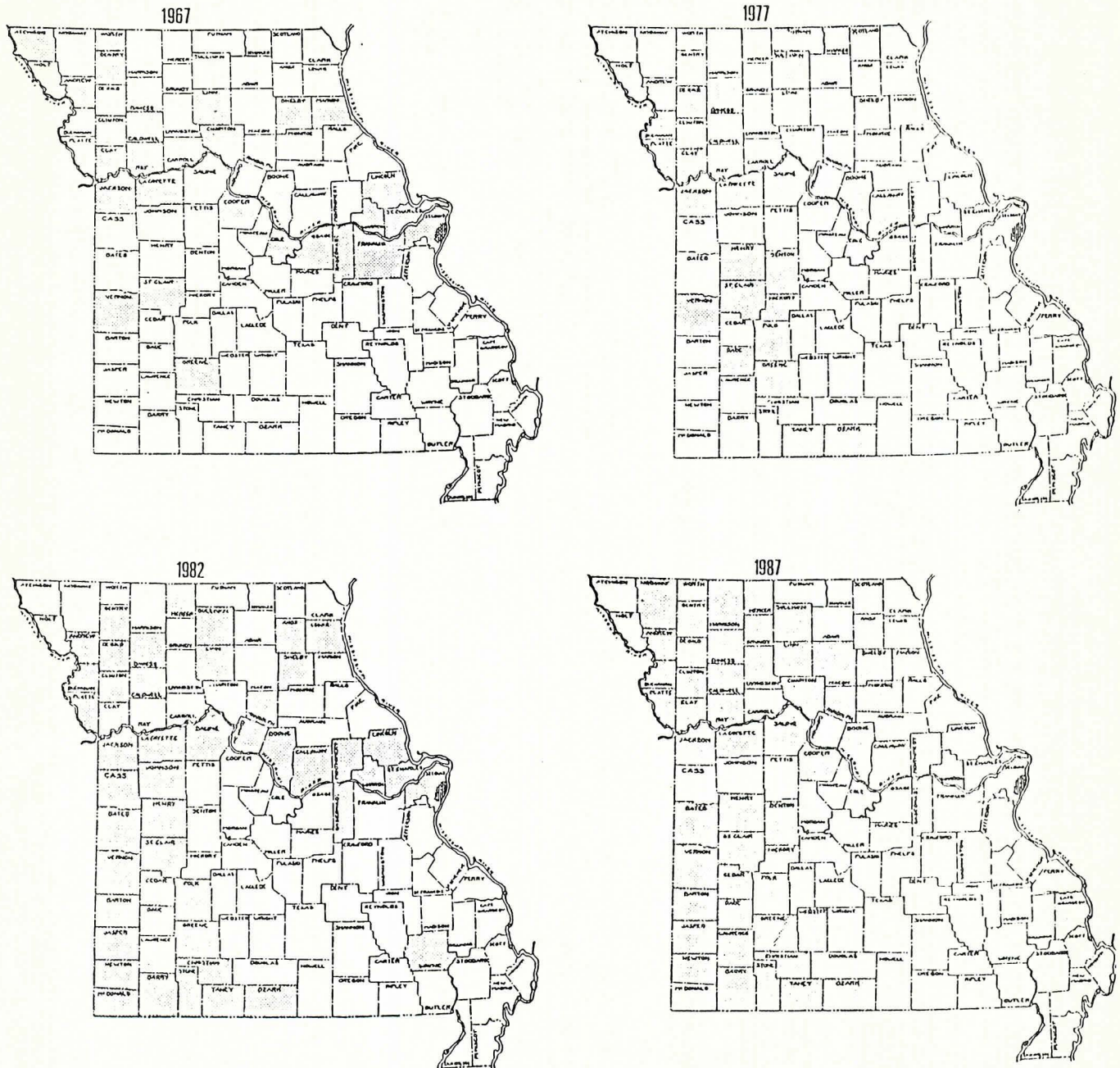
Area	Total No. Geese (1)	Nesting Attempts	No. Successful Nests
Schell-Osage	830*	94	85
Duck Creek	383*	42	23
James A. Reed	372*	34	32
Montrose	212*	81	67
Hunnewell	165*	23	21
Pony Express	1,248*	34	20
August A. Busch	181*	118	85
Marias Temps Clair	12	6	6
Cooley Lake	11	5	5
Little Dixie	20	10	10
Reform	6	3	-
Blind Pony (2)	150	≥ 6	6
Central Office	20+	6	4
Green Area (2)	50	≥ 5	5
Lake Paho (2)	75	≥ 7	7
Leach	2	1	1
Grand Pass	5	1	1
Schifferdecker	5	2	2
Henry Sever	2	1	-
Urich WA	2	1	1
Four Rivers	20	-	-
Bittern Bottoms	2	1	-
Whetstone	2	1	1
Otter Slough	2	1	-

(1) *No. Captured During Summer Banding Operations

(2) 1986 Data

RESIDENT CANADA GOOSE DISTRIBUTION BY COUNTY 1967-1987

FIGURE 20



Counties where Canada geese were observed by Conservation Agents during spring/summer.

FIGURE 21. CANADA GOOSE ROUNDUP RESULTS: 1975-1987
TOTAL GEESE CAPTURED STATEWIDE

